INDUSTRIAL MEDICINE AND SURGERY

Volume 23 NOVEMBER 1954 Number 11

"... 140 million *working hours are lost annually as a result of dysmenorrhea ...*"

Haman, J.O.: Am. J. Obst. & Gynec. 49:755 in M. Times 76:416.

"... one third *of all young women in America are afflicted with it.*"

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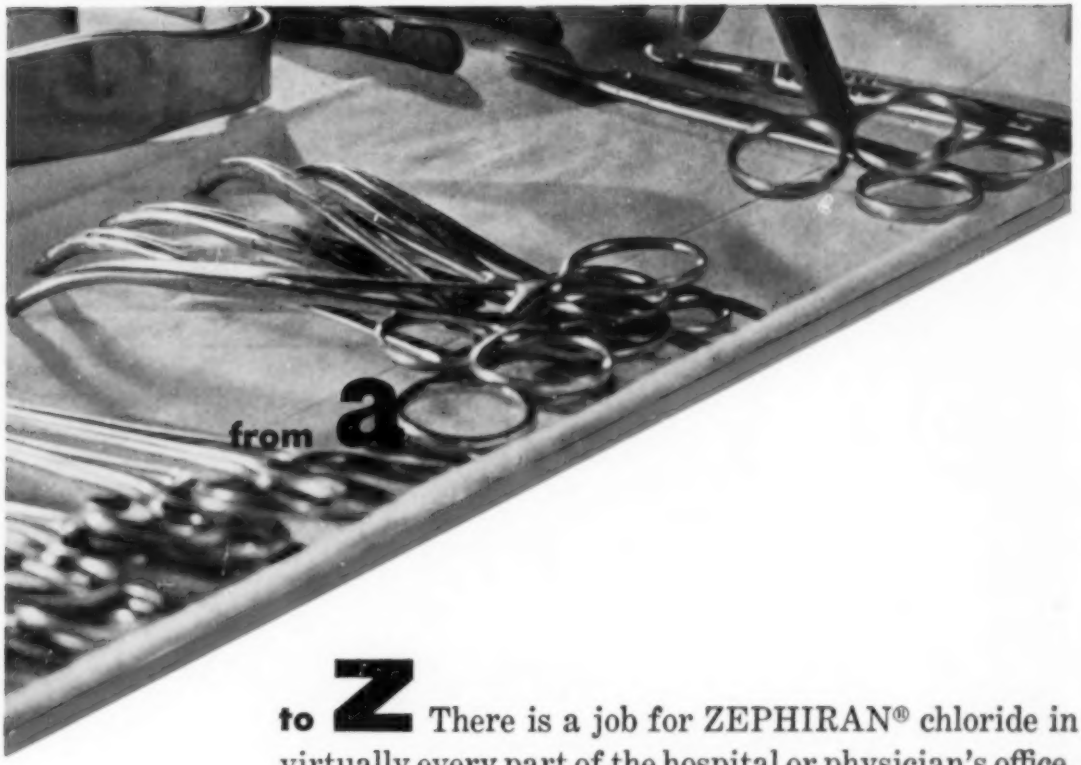

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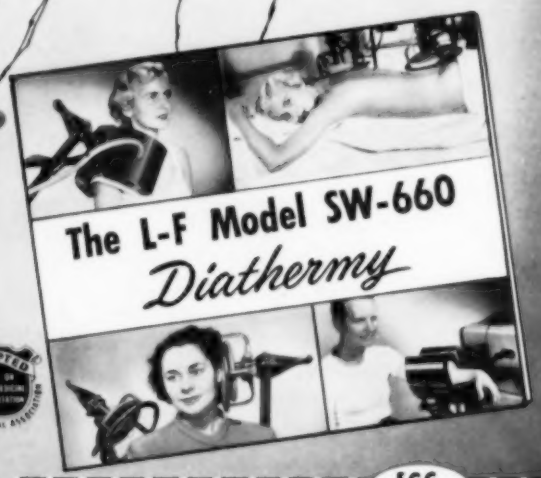

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Volume 23 NOVEMBER, 1954 *Number 11*

CONTENTS

TOXICOLOGY OF PLASTICS AND RUBBER—PLASTOMERS AND MONOMERS — Rex H. Wilson, M.D., and William E. McCormick — 479

INGUINAL HERNIORRHAPHY—CONSIDERATIONS OF THE INGUINAL SHUTTER AND VARIATIONS IN TISSUE STRENGTH — Earl G. M. Krieg, M.D. — 487

HYPERTENSION IN INDUSTRY—INQUIRY INTO THE INFLUENCE OF FAMILIAL FACTORS — C. A. D'Alonzo, M.D., P. M. Densen, and Mary Grace Munn — 491

DENNISON MANUFACTURING COMPANY'S EMPLOYEE MEDICAL SERVICES — 497

LEDERLE'S MEDICAL DEPARTMENT — 499

ELEVENTH INTERNATIONAL CONGRESS ON INDUSTRIAL MEDICINE — 503

OCCUPATIONAL HEALTH INSTITUTE—ORIGIN—DEVELOPMENT—PURPOSES — 501

CHEST INJURIES AND IATROGENIC HEART DISEASE — H. Arenberg, M.D. — 507

PERCODAN FOR PAIN IN INDUSTRIAL PRACTICE — Charles E. Piper, M.D., and Floyd W. Nicklas, M.D. — 510

OBJECTIVES OF A MODERN INDUSTRIAL HEALTH PROGRAM — L. E. Newman — 513

PRESIDENT'S PAGE — Robert C. Page, M.D. — 516

BOOKS — 517

EDITORIALS:

- Industrial Nurses and the Naples Congress — 518
- Problem Drinking in Industry — 519
- "His Own Man" — 520
- Specialty Certification — 520

Associations, Officers and Directors — 4, 6, 8, 10

Personal — 6, 8, 10, 12, 14, 16, 18

News, Comment, Opinion — 39

(Advertisers' Index — 47)

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JAMES H. STERNER, M.D., Medical Director of the Eastman Kodak Company, was acclaimed at the recent Industrial Conference at Houston, Texas, "for his outstanding contributions in the field of industrial health." He received a plaque emblematic of the 1954 Industrial Health Award. It was presented September 23 by the Houston Chamber of Commerce, one of the sponsors of the three-day conference. DR. STERNER, who has headed the Kodak Medical Department since 1951, was cited for his work at the Kodak company, for his leadership in the industrial health field nationally, and in his capacity as Chief Consultant in Industrial Health for the Atomic Energy Commission, the latter a post he has held for the past five years. He joined the Kodak Company in 1936 as Director of the Laboratory of Industrial Medicine.

A. C. LADD, M.D., United Airlines' District Medical Manager at San Francisco, announces the appointment of GEORGE F. CATTLET, M.D., and FRANCES R. SCHWARTZ, M.D., as Medical Examiners at United Airlines' San Francisco maintenance base. DR. CATTLET, a graduate of Philadelphia's Temple University in 1948, served his internship at Bryn Mawr Hospital in Pennsylvania and the Lennox Hill Hospital in New York. During the last three years he has been a Navy doctor, serving with the U.S. Marine Corps. DR. SCHWARTZ was graduated from Jefferson Medical College, Philadelphia, in 1948. He interned at St. Vincent's Hospital, New York, before becoming a Navy doctor in 1952. Prior to joining United Airlines' medical staff, he was associated with the Boston Veterans' Hospital.

WILLARD H. BAUMANN has been appointed to the new post of Industrial Hygiene Engineer for Jones & Laughlin Steel Corporation. A graduate of the University of Pennsylvania in chemical engineering, MR. BAUMANN comes to Jones & Laughlin from the Carbide & Chemical Company, Oak Ridge, Tennessee, where he had been Industrial Hygienist since 1948. He also served as a Junior Engineer for the Electric Storage Battery Company, Philadelphia,

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JOHN R. MERRIMAN, M.D., Evanston, Illinois.
PAUL T. PALMER, M.D., Peoria, Illinois.
G. H. PETERSON, M.D., Beloit, Wisconsin.

Component Society of the Industrial Medical Association.

from 1940 to 1942; and as Industrial Hygiene Engineer for the Illinois Department of Health from 1946 to 1948. At Jones & Laughlin, MR. BAUMANN will carry on activities designed to maintain high environmental, health, and sanitation standards for employees in all operations.

WILLIAM G. FREDRICK, SC.D., Director, Bureau of Industrial Health, Detroit Department of Health, has been elected a member of the Board of Trustees of the National Sanitation Foundation, of which DR. HENRY F. VAUGHN, Dean of the School of Public Health, University of Michigan, is the President. The National Sanitation Foundation has headquarters at Ann Arbor.

JOSEPH W. BLEVINS, M.D., has been released from active duty with the Armed Forces and has been transferred from the General Electric plant in Erie, Pennsylvania, to the West Lynn plant of General Electric, where he has been appointed Medical Director.

JAMES F. HAYS, M.D., until recently Captain (MC) U. S. Navy Dispensary, U. S. Naval Shipyard, Naval Base, Philadelphia, (Navy service 31 years) has been appointed Medical Director of International Latex Corporation, Playtex Park, Dover, Delaware.

NORTON NELSON, PH.D., Professor of Industrial Medicine, Post-Graduate Medical School, New York University-Bellevue Medical Center, has been made Director of the University's Institute of Industrial Medicine. DR. NELSON succeeds DR. ANTHONY J. LANZA, international authority on industrial medicine, whose retirement is concurrent with DR. NELSON's appointment. DR. LANZA will retain his association with the Institute as a Consultant. DR. NELSON was born at McClure, Ohio, in February, 1910. He graduated A.B. at Wittenberg College in 1932; and received his Ph.D. in Biochemistry at the University of Cincinnati in 1938, where he was successively Instructor (1938-1945), and Assistant Professor (1946-47), in the Department of Biochemistry. In 1947 he joined New York University as Associate Professor of Industrial Medicine, and in 1953 became a full Professor, and Director of Research of the Institute of Industrial Medicine. His

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professional experience includes work at the Children's Hospital Research Foundation, the May Institute for Medical Research of Jewish Hospital in Cincinnati, and the Armored Medical Research Laboratory at Fort Knox, Kentucky. He is a member of the American Society of Biological Chemists, American Chemical Society, Society for Experimental Biology and Medicine, American Industrial Hygiene Association, American Association for the Advancement of Science, Sigma Xi, and the Harvey Society.

RALPH A. ESKESEN, M.D., has joined the Medical Department of Lederle Laboratories Division, American Cyanamid Company, at Lederle's Pearl River plant. DR. ESKESEN received his M.D. from Johns Hopkins Medical School, Baltimore. Prior to joining Lederle, he conducted his own private practice in White Plains, New York, and for the past two years was also a clinical assistant at the New York Hospital-Cornell Medical School, New York City. At one time he was associated with the Aetna Casualty and Surety Company, New York, as Assistant Medical Director. During World War II, he served for two and a half years as a physician with the U.S. Army Medical Corps.

HOWARD L. SMALLMAN, M.D., Medical Director, Boiler Division, Babcock & Wilcox Company, Barberton, Ohio, retired from active practice on October 1, 1954. He became associated with Babcock & Wilcox part-time in 1923, and has served them full-time since 1941. DR. SMALLMAN was born in Ellicottville, New York, November 11, 1892; gradu-

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ated M.D. at the University of Michigan School of Medicine in 1916; interned at St. Luke's Hospital, Cleveland, Ohio, 1916-17; was a Captain in the Medical Corps in the Army, 1918-19. His memberships include AMA, Industrial Medical Association, and the Ohio and Summit County Medical Societies.

JAMES H. MEANS, M.D., formerly Chief of Medical Service at the Massachusetts General Hospital and Jackson Professor of Medicine at Harvard Medical School, has been appointed Acting Medical Director at the Massachusetts Institute of Technology, Cambridge, where he has been consulting physician on the medical staff since his retirement from the Massachusetts General Hospital in 1951. He will be in charge of all medical services at the Institute until the appointment of a permanent Director to succeed DANA L. FARNSWORTH, M.D., recently appointed Henry K. Oliver Professor of Hygiene at Harvard University.

THE BOARD of Directors of the American Academy of Occupational Medicine, meeting in New York City on September 24, elected the following physicians to Membership in the Academy: CHARLES W. ASBURY, M.D., Caterpillar Tractor Company, Peoria, Illinois; MERRILL R. BAY, M.D., Lake City Arsenal, Independence, Missouri; BERNARD BEHREND, M.D., Philadelphia Inquirer & Triangle Publications, Philadelphia; SHELDON P. BLISS, M.D., M. W. Kellogg Company, Jersey City, New Jersey; ELSA K. CHAFFEE, M.D., Eastman Kodak Company, Rochester, New York; PRESTON M. DUNNING, M.D., E. I. du Pont de Nemours & Company, Kinston, North Carolina; GLENN S. EVERTS, M.D., Curtis Publishing Company, Philadelphia; FRANK J. JARSEN, M.D., Bohn Aluminum & Brass Corporation, Detroit; JOHN F. KILGUS, M.D., Connecticut State Department of Health, Hartford, Connecticut; EDWARD B. MATES, M.D., Allied Chemical & Dye Corporation, Buffalo; ROBERT S. PIPER, M.D., Du Pont Company, Augusta, Georgia; NORBERT J. ROBERTS, M.D., Pennsylvania Railroad Company, Philadelphia; GORDON B. WHEELER, M.D., Pratt & Whitney Aircraft Division, East Hartford, Connecticut; FRANK D. BRENT, M.D., Aluminum Company of Canada, Montreal, Quebec; JOHN M. LYNCH, National Institutes of Health, Bethesda, Maryland. Advanced from Member to Fellow was MAC ROY GASQUE, M.D., who is on leave from the Ecusta Paper Corporation of Pisgah Forest, North Carolina, for military service. The Board of Directors voted to hold the next Annual Meeting of the Academy at the Hotel Warwick in Philadelphia, February 10 and 11, 1955. DR. F. B. LANAHAN, of the Electric Storage Battery Company, is Chairman of the Program Committee for the meeting.

INDUSTRIAL MEDICAL ASSOCIATION OF PITTSBURGH is the new Component Society of the INDUSTRIAL MEDICAL ASSOCIATION. About a hundred IMA members in Counselor Districts 8 and 9 had indicated their desire for a regional organization, and at a meeting on September 30, they formed the Pittsburgh Association. Acceptance by the IMA Board of Directors followed on October 17. Officers elected at the organization meeting: *President*, J. HUBER WAGNER, M.D.; *President-Elect*, REX H. WILSON, M.D.; *Vice-President*, FRANK GRAY, M.D., *Secretary-Treasurer*, MERLE BUNDY, M.D. *Directors*—for one year: A. G. KAMMER, M.D.; D. A. KELLY, M.D.; J. J. BRANDABUR, M.D.; R. J. SEXTON, M.D. *Directors*—for two years: DANIEL C. BRAUN, M.D.; JOSEPH T. NOE, M.D.; D. JOHN LAUER, M.D.

THE Philippine Association of Occupational Medicine "has just completed two years of existence." The quote is from Volume 1, Number 1 (July-September, 1954) of the *Philippine Journal of Industrial Medicine and Surgery*, the official organ of the Association. The new Journal is to be published quarterly. This first number lists the names of the 120 members of the Philippine Association. The Officers are: President, ENRIQUE S. REYES, M.D., Waterous Clinic, Port Area, Manila; Vice-President, ANTONIO CASAL, M.D., San Miguel Brewery, Manila; Secretary-Treasurer, PACIFICO N. FRANCO, M.D., Alhambra Cigar & Cigarette, Mfg. Co., Tayuman, Manila.

CHRISTOPHER LEGGO, M.D., Medical Director, Eastman Kodak Plant, Palo Alto, California, was the guest speaker at the September 16 meeting of the Midpeninsula Safety Council at Menlo Park. His subject was "Back Injuries in Industry."

CHICAGO Society of Industrial Medicine and Surgery held its Fall Scientific Meeting, jointly with the Chicago Casualty Adjusters Association, Wednesday, October 20, 1954, at 8:00 P.M., at the Bismarck Hotel, Chicago. FRED W. FITZ, M.D., Medical Director, A. B. Dick and Company, and Assistant Professor of Medicine, Northwestern University, talked on "Industrial Aspects of Heart Disease."

DOUGLAS B. WILSON, M.D., has recently resigned from the Air Force where he was Major, Hqs. AMC, Office of the Air Surgeon, Wright-Patterson AFB, Ohio, and has been on an extended vacation in various parts of Canada. DR. WILSON received his M.D. at the University of Buffalo School of Medicine in 1946, and his M.P.H. at the University of California School of Public Health in June, 1952.

FORMER PRESIDENT HERBERT HOOVER has appointed THEODORE G. KLUMPP, M.D., President of Winthrop-Stearns Inc., as Chairman of the Task Force on Medical Services of the Hoover Commission on Organization of the Executive Branch of the Government. MR. HOOVER'S invitation to DR. KLUMPP was prompted by the death early in September of Chauncey McCormick, Chicago, who headed the group since its formation in 1953. DR. KLUMPP has been a member of the Task Force from its beginning. Objectives of the group are to provide better medical care for beneficiaries of the Federal medical program; create a better foundation for training and medical service in Federal agencies; reduce the drain of doctors away from private practice; develop better organization for medical research; provide a better state of medical preparedness in the event of war. The over-all purpose is to promote economy and efficiency in the executive department. DR. KLUMPP was Chief of the Drug Division, U.S. Food and Drug Administration from 1936 to 1941. Just prior to becoming President of Winthrop-Stearns Inc., he was Director of Drugs, Food and Physical Therapy, and Secretary of the Council on Pharmacy and Chemistry, of the American Medical Association. In 1951 he was Chairman of the Office of Defense Mobilization's Task Force on the Handicapped.

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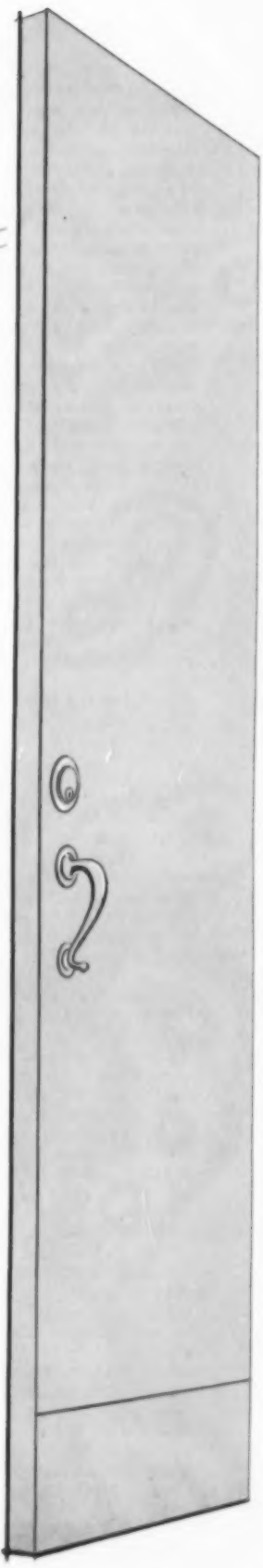
GEORGE HOWARD GEHRMANN, M.D., Director of Du Pont's Medical Division since 1926, retired October 1 as Director, but is continuing as Associate Medical Director until his retirement from the company November 1, 1955. ALLAN J. FLEMING, M.D., who has been Assistant Director since 1948, was appointed to succeed DR. GEHRMANN as head of the Division, and C. A. D'ALONZO, M.D., Assistant to the management of the Division, was named Assistant Director. The Medical Division, a unit of the Employee Relations Department, is charged with safeguarding the health of Du Pont employees. DR. GEHRMANN was largely responsible for developing the present Du Pont medical program and has seen it grow from one small office manned by one doctor, one nurse, and one secretary to "the present organization of 166 physicians, of whom 130 are full-time and 36 are part-time." He has been with the company since 1915, except for a period in the Army during World War I; became head of the Medical Division in 1926. He was graduated from Long Island Medical School in 1913. He is a Past-President of the American Academy of Occupational Medicine, a Fellow of the Industrial Medical Association, the American College of Physicians, the AMA, and the American Public Health Association, a member of the President's Committee on Employment of the Physically Handicapped, and a member of the Advisory Board of the Greenbriar Clinic, White Sulphur Springs, West Virginia. He has written numerous articles on industrial medical subjects, and for many years has been "distinguished for scientific investigations, particularly of industrial chemical problems as related to industrial medicine. . . ." ALLAN JAMES FLEMING, M.D., new Medical Director of the Du Pont Company, became identified with industrial medicine in 1935. He was born in Winnipeg, Canada, July 23, 1901, and attended the University of Manitoba, receiving his Bachelor of Science degree in physics in 1924 and his Master's degree in 1926. He later entered the medical school at McGill University, Montreal, graduating in 1932 with the degree of Doctor of Medicine. After two years as plant physician at the Beloeil Plant of Canadian Industries Limited at McMasterville, Quebec, he joined Du Pont in 1937 as a toxicologist in the Haskell Laboratory for Toxicology and Industrial Medicine, then at the company's Experimental Station. In 1941 he was made Assistant Director of the Haskell Laboratory, and in 1948 was appointed Assistant Director of the company's Medical Division. He was advanced to the Directorship of the Division in September, 1954. He has written a number of articles for medical and technical publications. Among medical societies of which he is a member are the Industrial Medical Association, the AMA, the American Academy of Occupational Medicine, the Canadian Medical Association, the Canadian Physiological Society, the New Castle County Medical Society, and the Delaware State Medical Society. He is an active member of the Wilmington Symphony Orchestra, has been a member of its Board of Directors for a number of years, was President of the organization in 1949 and 1952. He is an elder of Hanover Presbyterian Church. . . . C. ANTHONY D'ALONZO, M.D., Assistant Medical Director of Du Pont, has been engaged in the company's preventive medical program for employees since 1939. He joined Du Pont in that year as Supervisor of the medical unit at the Experimental Station near Wilmington, Delaware. During the war he served as a flight surgeon in the Army Air Force, returning to the Experimental Station as Medical Supervisor in 1945. He was promoted to the position of Assistant to the management of the company's Medical Division in 1953, and became Assistant Director of the Division in 1954. He was born November 15, 1912, in Wilmington. He attended the University of Virginia where he received both his Bachelor of Arts and Doctor of Medicine degrees, the latter in 1937. He served his internship at the Delaware Hospital in Wilmington. He is a Diplomate of the American Board of Internal Medicine, a Fellow of the American College of Physicians, a Fellow of the American Academy of Occupational Medicine, a member of the AMA, the Industrial Medical Association, and the New Castle County Medical Society. He and DR. ALLAN J. FLEMING, are co-editors of the new book, "Modern Occupational Medicine," just published by Lea & Febiger. DR. GEHRMANN is one of the contributing authors.

DR. ROSS A. MCFARLAND, Associate Professor of Industrial Hygiene at Harvard University, will direct the Harvard School of Public Health's new graduate training program related to the field of Aviation Medicine—a medical specialty recently certified by the American Board of



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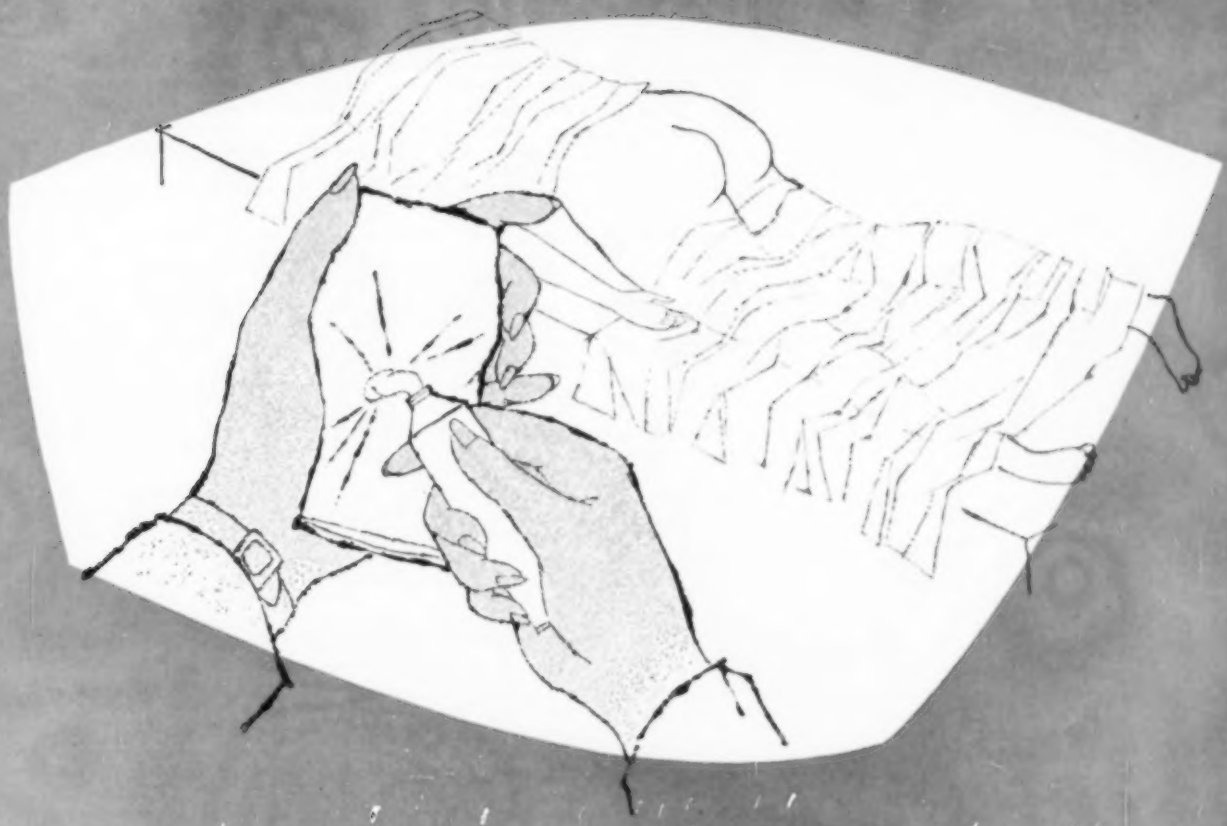
Preventive Medicine. The program meets the Board requirements of one year of graduate training in the areas of basic sciences related to aviation medicine, and will lead to a degree of Master of Public Health. A special seminar in aviation medicine is being given by DR. MCFARLAND in each of the four quarters of the year. Much of the material is drawn from his two books, "Human Factors in Air Transport Design" (1946), and "Human Factors in Air Transportation" (1953). The seminars include discussions of practical problems, from the human aspect, of high altitude operations, ventilation, temperature, humidity, control of insects and air-borne diseases, noxious gases, noise, vibration, acceleration and motion, cockpit and control cabins and passenger accommodations. Consideration is also given to psychological factors involved in the selection of airmen and studies of the relation of fatigue and age in the operational efficiency of airmen. During the first quarter of study DR. RICHARD FORD, Assistant Professor of Legal Medicine, Harvard Medical School, offers a special course in Legal Medicine covering the medical examiner system and the inter-relations of disease and injury. The 40-hour basic course includes instruction in biostatistics, epidemiology, psychological problems, environmental physiology, conservation of health in tropic countries, industrial hygiene and industrial safety. Students may select courses from a group of elective subjects in the final two quarters. Educational requirements of the American Board of Preventive Medicine, for qualification in Aviation Medicine, include completion after internship of two academic years of graduate study in preventive medicine and aviation medicine; two years of residency in aviation medical practice, and two years of internship in addition to regular and frequent participation in aerial flight. Fifteen Air Force aviation medical officers are enrolled in the first class at the School of Public Health. Admission is not limited, however, to representatives of the military services but includes those who plan to enter medical services of aircraft manufacturing companies and civil airlines. DR. MCFARLAND has been with the Harvard School of Public Health since 1948 and before that with the Fatigue Laboratory of the Harvard Business School. He organized the medical program for the Pan American World Airways system, and directed the flight fatigue studies of aircrews in opening the airline's initial air transport routes in the Pacific and Atlantic areas.

EDWARD C. HOLMBLAD, M.D., Managing Director, Industrial Medical Association, and Senior Attending Surgeon at St. Luke's Hospital, Chicago, was guest speaker at a joint meeting of the Winnebago and Outagamie County Medical Societies, for which Kimberly-Clark Corporation, Neenah, Wisconsin, and its Medical Director, G. W. PETERSEN, M.D., were hosts on Thursday, September 9, 1954. DR. HOLMBLAD said: "this is the kind of meeting we had been advocating for a long time; a meeting in industry of county medical societies with management, because it can lead to better understanding of the problems of both."

—*Neenah Twin City News Record*, September 10, 1954.

VALLIANT C. BAIRD, M.D., H. T. ENGELHARDT, M.D., and R. A. WISE, M.D., Medical Division, Humble Oil & Refining Company, Houston, Texas, have an article entitled "The Role of the Industrial Physician in the Prevention of Cardiovascular Disease" in the September, 1954, *Journal of the American Geriatrics Society*. DR. BAIRD is the Instructor in charge of a course in industrial medicine at the University of Texas Postgraduate School of Medicine, Houston, October 12 through November 16 as follows: *October 12:* (1) National Picture and Position of AMA Council. (2) Professional Relationship of Industrial Medicine and the Private Practice of Medicine. (3) Industrial Medicine and Its Relationship to the Practice of Medicine in the State of Texas. *October 19:* (1) Industrial Medicine in a Large Company Operation. (2) Industrial Medicine in a Small Company Operation. (3) Industrial Medicine by a Private Practitioner. *October 26:* (1) Industrial Hygiene Aspects of an Industrial Medical Program. (2) Cooperation of Public Health Agencies with Industrial Medical Programs. (3) Diagnosis and Detection of Occupational Illness. *November 2:* (1) Medicolegal Aspects of Industrial Health Problems and Compensation Laws. (2) Aspects of Handling an Industrial Medical Problem as Viewed by the Insurance Carrier. (3) Medical Rehabilitation Following Injury. *November 9:* (1) Industrial Medicine—Its Mental Health Viewpoint: (a) alcoholism, (b) absenteeism, (c) testing. (2) Health Education—Health Promotion: (a) media, (b) evaluation. (3) Problems of a Special Nature as Experienced in an Industrial Medical Program; Aero Medicine. *November 16:* The Specialties View Industrial Medicine: (1) Orthopedics and Surgery Play an Important Part. (2) The Internists in Private Practice and Their Relationship to Industrial Medicine. (3) The Field of Psychiatry and Its Relation to Private Practice and Industrial Medicine.

THE FIRST Northwest Industrial Health Conference was held at Portland, Oregon, September 20-21, 1954. The following are from newspaper comments on the Conference, in the *Portland Oregon Journal* and the *Portland Oregonian*: GEORGE M. SAUNDERS, M.D., Medical Director, Socony Vacuum Oil Company: "Death has no respect for wage and salary brackets. Life expectancy for white-collar workers is greater than for laborers doing heavy work, but 'hard work itself is not necessarily harmful.' Maladjustment on and off the job may make work a harmful stress. Executives should use their muscles more, their brains less—particularly if they habitually go home with bulging briefcases and hurry back to paper work after cocktails and dinner" . . . . HARDY KEMP, M.D., Baylor University Medical College: "Industrial medicine is now a highly specialized affair, and it tries to keep a man from becoming disabled" . . . . ROBERT K. CUTTER, M.D., President, Cutter Laboratories: "Health often depends on the 'tone' or psychological environment of the industrial plant" . . . . DUDLEY A. IRWIN, M.D., Medical Director, Aluminum Company of America: "The big problem in industry today is non-industrial personal disease" . . . . E. P. LUONGO, M.D., Medical Director, General Petroleum Corporation: "An industrial physician benefits his employer and his community by keeping the maximum number of workers functioning on an optimum level of efficiency" . . . . WILLIAM D. NORWOOD, M.D., Director, Health and Safety Section, Hanford Plant, Richland, Washington: "Richland, a community of 27,000, has been described as America's healthiest



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1. Schwartz, F. R., Tronothane in Common Pruritic Syndromes, Postgrad. Med., 16:19, July, 1954.
2. White, C. J., A New Anesthetic for Certain Diseases of the Skin, J. Lancet, 74:98, March, 1954.
3. Birnberg, C., and Horner, H., A Simple Method for the Relief of Postpartum Perineal Pain, Amer. J. Obst. & Gynec., 67:661, March, 1954.
4. Peal, L., and Karp, M., A New Surface Anesthetic Agent: Tronothane, Anesthesiology, in press, 1954.

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community. The death rate there is one-third less than for the state or nation. Integration of the industrial health program with over-all community planning is responsible."

FRANK GUIDOTTI, M.D., describes the examinations done by the New York Hotel Trades Council and New York Hotel Health Center, Inc. The pre-employment examinations at the Center are of the same caliber as those an employer would provide in a good in-plant service. DR. GUIDOTTI recommends that the employee be fully advised as to the purposes of the examination, which are listed as: "(1) to guarantee the best possible placement to safeguard the employee's health; (2) to detect unrecognized pathology and advise remedial measures which will improve his health; (3) to minimize the occurrence of accidents; (4) to protect the health of all workers from communicable disease." DR. GUIDOTTI estimates that as a result of the Hotel Center preplacement examinations, about $10,000 in compensation insurance costs, life insurance, disability benefits, etc., was saved during two years by the 5.8% rejections of prospective employees as unfit. He remarks that: "Ideally, inventory-taking should include sociologic as well as physical findings. If this program is carried out consistently, it will make for happier and more successful persons as well as healthier ones, because it is governed by an environmental as well as a medical point of view.

—From "How Labor Health Plans Make Vital Contribution," in *Health*, July-August, 1954.

WAYNE UNIVERSITY College of Medicine, Detroit, was the scene of an Industrial Health Education Conference sponsored by the Tuberculosis and Health Society and Health Council, United Community Services of Metropolitan Detroit, held on Thursday, October 28, 1954. The program included DRS. LYNDLE MARTIN, BURGESS GORDON, JOSEPH NOE, GORDON EADIE, EARLE A. IRVIN, ARTHUR VORWALD, and C. P. ANDERSON, together with FRANK PATTY, WILLIAM G. FREDRICK, JOHN SOET, and ISABEL PHELAN, DOROTHY N. KELLY, MRS. J. LINDLEY, MRS. E. MURPHY, and GENEVIEVE HARKIN. Among the subjects were "Health Education Pays Dividends" and "Improved Occupational Health Through Safety Education." There was a panel discussion on "Know-How in Health Education"; another on "Reduction of Absenteeism from Illness"; a third on "The Use of Community Services in Industrial Health Education Programs."

THE NEW YORK State Society of Industrial Medicine is holding its fall professional meeting at the Park Sheraton Hotel, New York City, on Thursday, November 4. Following a showing of the Ayerst Laboratories' film "Safe Hands," G. E. CRAIG, M.D., of McGill University, will talk on "Dermatitis in Industry"; and L. L. MacKENZIE, M.D., New York University-Bellevue College of Medicine, will talk on "The Obstetrical and Gynecological Problems of Working Women." After dinner, DELAVAN V. HOLMAN, M.D., Assistant Clinical Professor of Industrial Medicine, New York University Medical School, will speak on "The Working Cardiac." J. J. POUTAS, M.D., Medical Director, Lever Brothers, is Chairman of the Arrangements Committee.

A SYMPOSIUM on Industrial Medicine will be featured at the University of Miami School of Medicine, on Friday and Saturday, December 3-4. Workmen's compensation, injury case handling, dermatological problems, part-time employee health service, toxicological problems, health examinations, fatigue, the cardiac patient, and a Problem Clinic are among the 22 subjects of presentations; and DRS. A. J. FLEMING, E. C. HOLMBLAD, KIEFFER DAVIS, R. E. ECKARDT, B. L. VOSBURGH, WILEY SAMS, GORDON C. RING, R. BOUCEK, J. M. BOSWORTH, W. G. THUSS, and W. B. DIECHMANN are speakers.

J. K. BELL, M.D., Medical Director, Ontario Pulp and Paper Company, Thorold, Ontario, is the new Chairman, and D. K. GRANT, M.D., Ontario Hydro Electric Power Commission, Toronto, Ontario, is the new Secretary of the Section of Industrial Medicine of the Ontario Medical Association. This Section met with the Industrial Medical Association of the Province of Quebec, at Ottawa, September 23-25, 1954.

THE MASSACHUSETTS Medical Society Committee on Industrial Health is planning a one-day program on Industrial Medicine, aimed at the general practitioner, to be held at the Sheraton Plaza Hotel, Boston, November 17. DR. EDWARD J. STIEGLITZ, from Washington, is to be the Luncheon speaker; his appearance is being sponsored by the New England Industrial Medical Association.

JOHN P. REPETTO, M.D., Medical Director, Philco Corporation, Philadelphia, and IAN MACLACHLAN, M.D., Medical Director, Carrier Corporation, Syracuse, New York, are among the members of the new Committee appointed by the National Association of Manufacturers, September 26, to expand the Association's activities in encouraging employment of the physically handicapped.

This Month

SEVERAL of the American Delegation to the Eleventh International Congress on Industrial Medicine at Naples in September (page 503) took advantage of the opportunity to travel elsewhere than in Italy. Some visited Egypt. We heard that one of their purposes was to study lung cancer in camels. . . . MR. NEWMAN (page 513) makes an interesting point, talking about the industrial physician who is on a fee basis: "*Other* members of management expected to be paid in proportion to the plant's successes rather than its failures. . . ." And in DR. D'ALONZO'S "Hypertension in Industry" (page 491) there's something else to think about: "The percentage of employees with hypertension among non-smokers is statistically greater than among the smokers. The significance of this is not clear. It may be that many hypertensives have stopped smoking. . . ." THIS is the 40th anniversary of the Audit Bureau of Circulations. Our membership in that organization is eight years old; we were accepted in June, 1946, and our Journal, *Industrial Medicine and Surgery*, is still the only medical journal whose circulation figures are audited twice a year and attested to by this Bureau. This, in the words of an Octavus Roy Cohen character, is "one of the proudest things we are of." The ABC audits tell all concerned what they want to know about us, and once in a while they tell us interesting little things about ourselves. For example, we now have paid subscriptions from 22 foreign countries.

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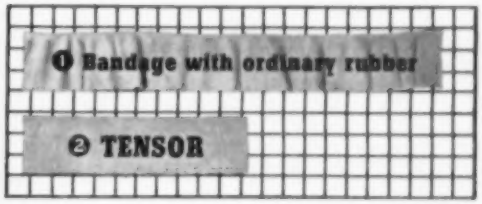

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*Sulzberger, Marion B., and Wolf, J.: Dermatologic Therapy in General Practice, ed. 3, Chicago, Year Book Publishers, Inc., 1948, p. 107.

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Unless you are one of the handful of physicians in the Far North, you'll see an Eskimo only in adventure movies. In a way, it might be a welcome relief to examine a nose hardly ever affected by infectious and/or allergic conditions.

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*(Response in 254 of 302 patients[1-5])

1. Busis, S. N., and Friedman, L. L.: Antibiotics & Chemotherapy 3:299, 1953. 2. Lazar, A. M., and Goldin, M.: Eye, Ear, Nose & Throat Monthly 32:512, 1953. 3. Cohen, B. M., and Mendelsohn, P.: Laryngoscope 63:1118, 1953. 4. Wittich, F. W.: Ann. Allergy 12:185, 1954. 5. Vickers, M. A.: Laryngoscope 64:632, 1954.

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Clinical results[1]: Abolished vomiting in 40 of 41 gravid women, eliminated nausea in 30 of 41. Less than 3% side effects. **Dosage:** 1 or 2 tablets, at bedtime. Larger doses if necessary. **Supplied:** Bottles of 25, prescription only. Each Bonadoxin Tablet contains 25 mg. meclizine hydrochloride, 50 mg. pyridoxine hydrochloride.

1. Garrett, T. A.: Personal communication.

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1. Grayzel, H. G., Heimer, C. B., and Grayzel, R. W.: New York St. J. M. 53:2233, 1953.
2. Sobel, A. E. and Rosenberg, A.: 124th Meeting American Chemical Society, 1953.

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Hardy, H.A., et al.: Calcium Ethylenediamine-tetraacetate in Treating Heavy Metal Poisoning, A.M.A. Arch. Indust. Hyg. 7:137 (1953).

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*Choy, D.S.J.: Clinical trials of a new plastic dressing for burns and surgical wounds. A.M.A. Arch. Surg. 68:33-43 (Jan.) 1954.

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The prayer lingers still . . . across the table as Dad begins to serve . . . it brushes Mother's still-bowed head . . . it caresses Sally's fist as she reaches for the promised drumstick. The words of thanksgiving are being made real in this moment – the words of gratitude from a good provider to the Great Provider.

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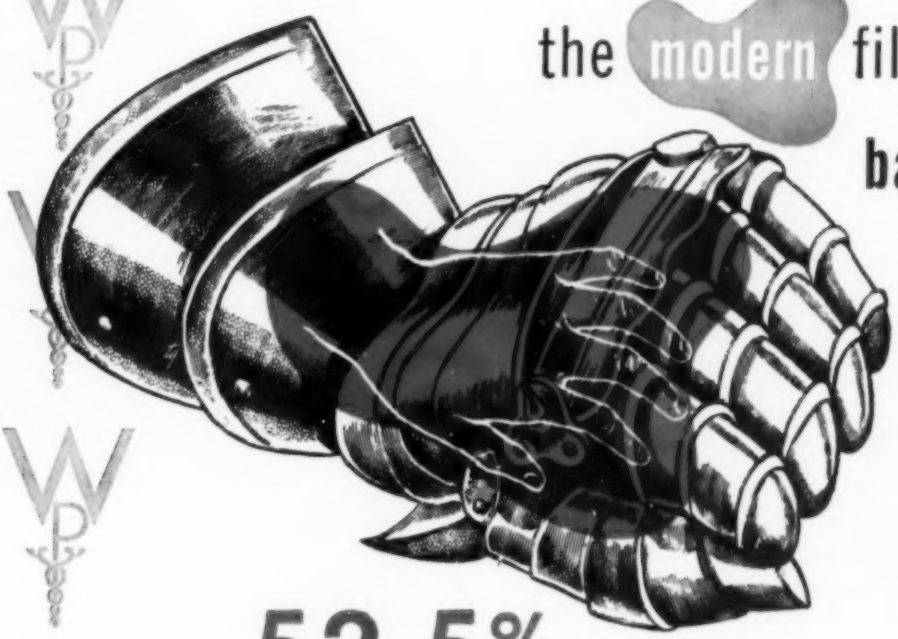

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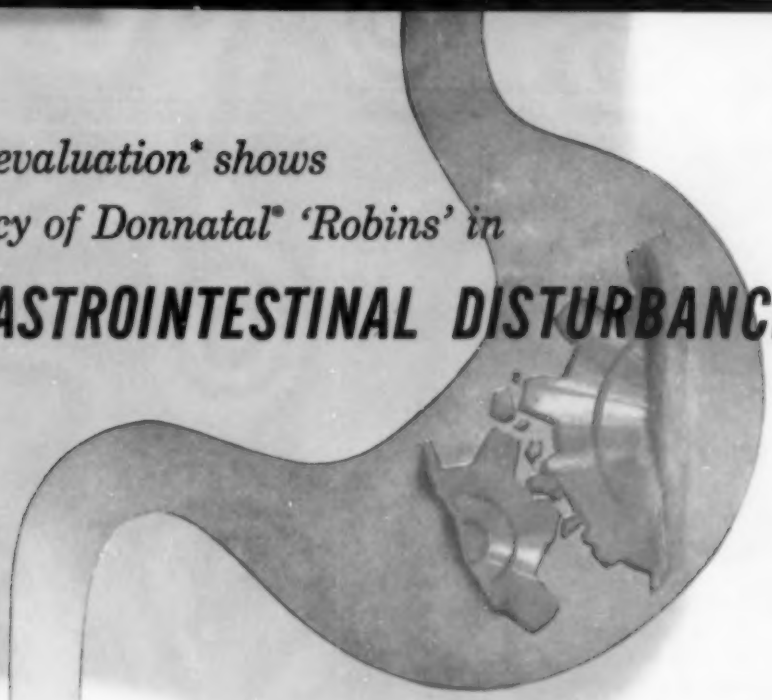

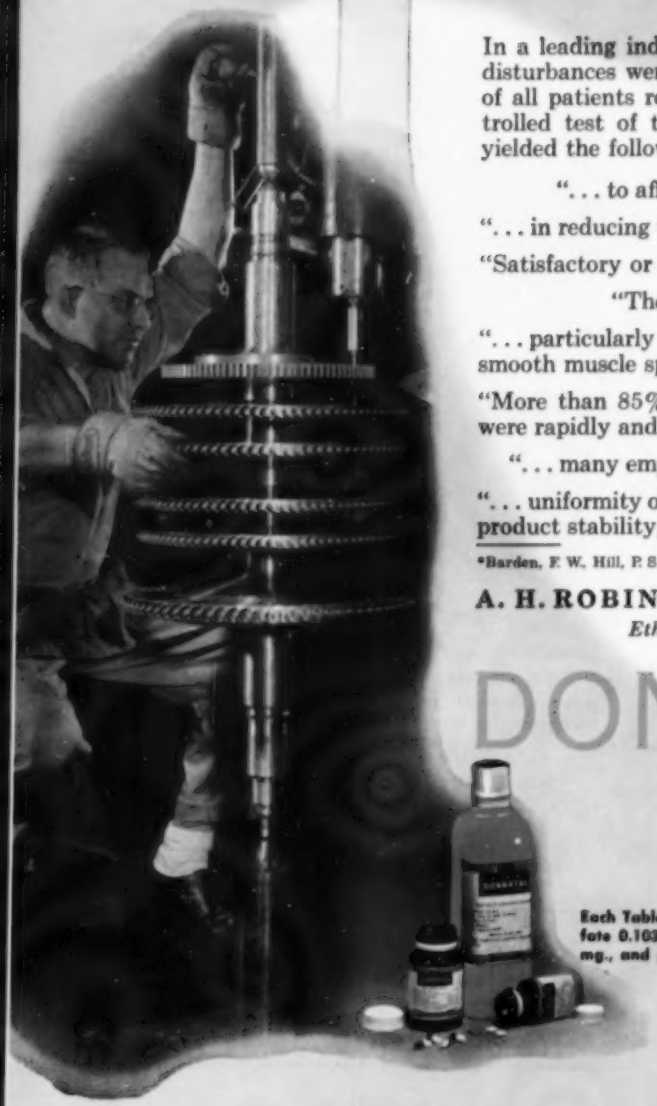

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"More than 85% of patients with epigastric pain and discomfort were rapidly and completely relieved of symptoms."

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*Barden, F. W., Hill, P. S., Mahaney, W. F., & Cuneo, K. J.: Journal Maine Med. Assn., Jan., 1954.

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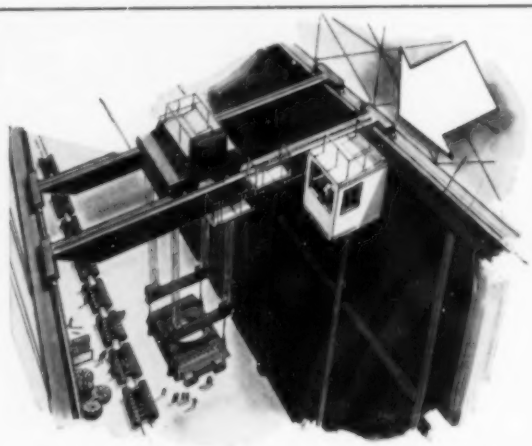

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INDUSTRIAL MEDICINE AND SURGERY
NOVEMBER, 1954

Toxicology of Plastics and Rubber

—PLASTOMERS AND MONOMERS

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THE POPULAR demand for all types of articles made from plastics has been so tremendous that literally there has been created an entirely new industry in the past several years. Many plants, large and small, are devoting their entire manufacturing facilities to "plastic" items. The demand for the compounds going into the composition of the plastic materials is so great that supplies of certain of them are short.

Because the industry is new and because of the ingenuity of modern research, the compounds making up the plastics are ever changing. Also, as demands for different types of articles made from plastics are increasing, this creates a demand for different types or kinds of plastics (Table I). Naturally, the kind of material needed for a plastic automobile body is different from the material needed for an elastic garden hose or a pair of stockings. I know of no other industry which better represents the creative genius of man than the so-called plastic industry. The creation at less cost of better things for better living is the aim of the modern business man. To achieve this, there have been brought into existence the wonderful modern-day research laboratories.

It is important to know the chemical properties of a compound and its toxicity. It is also important to know how to work with it safely. Equally important is to know the treatment for overexposure to the toxic chemical to prevent permanent damage or death.

It would be impossible to name, let alone discuss, the toxicological properties of all of the chemical compounds being used in the plastic industry. It is worth-while to discuss the properties of some of the more common resins, plasticizers, stabilizers and solvents being used. Unfortunately, the toxicological properties of all of these are not too well defined. It is to the credit of people working in industrial medicine and hygiene that industry is becoming aware of the necessity for knowing the toxicity of its materials and is taking steps to insure that its employees are not exposed to materials that would harm them.

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Resins

LEHMAN[1] in July, 1951, presented a list of resins both suitable and unsuitable for use as food packaging ingredients. He stated "that as a general rule resins are so insoluble as a class that the chances of contamination by the solvent action of foods are rather slight." The types of resins he considered suitable for food use are:

Polyvinyl chloride.
Polyvinyl acetate.
Polyvinyl chloride-acetate.
Polyvinylidene chloride.
Polystyrene.
Polyethylene.
Cellulose acetate.
Regenerated cellulose.
Terephthalic acid-ethylene glycol copolymer.
Butadiene-acrylonitrile (Perbunan or Hycar synthetic rubber).

Lehman classified as being unsuitable for use in food packages because of the lack of adequate data concerning their toxicity:

Polyvinyl formal.
Polyvinyl acetal.
Polyvinyl butyral.
Polymeric furfuryl alcohol.
Coumarone-indene.
Urea formaldehyde.
Phenol formaldehyde.
Aniline formaldehyde.

A. Vinyl Type

VINYL CHLORIDE, vinylidene chloride, and vinyl acetate readily polymerize. By proper combinations of one or more of these monomers, many polymer variations can be produced. These polymers, after properly mixing with plasticizers and stabilizers, are then used in hundreds of dif-

ferent items. The three polymers, either individually or associated with each other, are relatively non-toxic.[1]

Seeler and associates studied the chronic toxicity of a copolymer of vinyl and vinylidene chloride.[2] This work was done because the copolymer was being considered for use as a constituent of a plastic film for wrapping food products. They reported that rats fed a diet containing 5% vinyl and vinylidene chloride copolymer for two years showed no toxic effects. Two dogs were fed a diet containing 5% vinyl and vinylidene chloride copolymer without evidence of toxic effects.

Some toxicological information also exists on the three monomers—vinyl chloride, vinylidene chloride, and vinyl acetate. Patty, Yant, and Waite[3] investigated the acute effects of vinyl chloride on experimental animals and found this to be essentially narcosis. Carpenter and associates,[4] in range finding studies, observed that a vapor concentration of 32,000 ppm of vinylidene chloride resulted in a portion of deaths of the six rats exposed for four hours. The vapor toxicity is reported to be of the same order as ethylene dichloride.[5] Carpenter and associates[4] also reported a level of 4,000 ppm of vinyl acetate produced some deaths under the same conditions.

B. Acrylonitrile—Butadiene Type

VARIOUS types of American made rubbers have been studied physiologically. Among those found to be acceptable for food use are Perbunan and Hycar (polymers of acrylonitrile and butadiene). However, the manufacture of these items does present some health problems.

Wilson and associates[6] reported on the toxicity of acrylonitrile in 1948. They stated that, in their observations, workmen handling cleaning operations in polymerizers with exposures varying from 16-100 ppm for 20 to 45 minutes frequently show symptoms of dull headache, fullness in the chest, irritation of all mucous membranes including the eyes, nose and throat, and a feeling of apprehension and nervous irritability. Some workmen complained of intolerable itching of the skin with no demonstrable dermatitis. Direct skin contact with acrylonitrile causes irritation and erythema followed by bleb formation, desquamation and slow healing. Wilson[7] reported several cases of acrylonitrile poisoning in which there developed mild jaundice, low grade anemia and leucocytosis. Given orally the minimal fatal dose of acrylonitrile in laboratory rats is stated[8] to be 150 mg/kilo body weight. Symptoms in these animals included respiratory changes, cyanosis, convulsions and death.

Because the mode of action of acrylonitrile in the human system appears to be similar to that of cyanide, the treatment of overexposure to acrylonitrile was outlined by Wilson and associates[6] to be the same as that for overexposure to cyanide. This treatment was proved to be life saving in several instances.

Vitamins B_1 and C have been found to be beneficial in preventing weight loss in laboratory animals exposed to acrylonitrile over long periods.

Wilson and associates[6] also suggested as a prophylaxis against overexposure to acrylonitrile that atmospheric concentrations should not exceed 20 ppm. This necessitates enclosure of processes to the maximum degree possible and the effective use of mechanical exhaust ventilation.

Skin contact should be avoided, not only because of the compound's vesicant action, but also because of possible toxic systemic effects. In the case of skin contact with the concentrated compound, immediate washing with copious quantities of soap and water is necessary. If spilled on clothing, the clothes should be immediately removed and a shower taken by the individual. The effect of chronic low-grade atmospheric or skin exposures on humans is still undetermined. It is, therefore, advisable that working personnel be given periodic physical examinations, with special emphasis on hematology and liver and kidney functions. The determination of the thiocyanate level in both blood and urine has been suggested as an index of overexposure.

Wilson and associates[6] also reported on the toxicology of butadiene. They stated that butadiene is practically innocuous, aside from its narcotizing and anesthetizing effect at very high concentrations. Human subjects who were exposed to 8,000 ppm of butadiene complained of eye irritation, blurring of vision, coughing, nasal congestion, and drowsiness.[9] Subsequent repeated exposures gave no indication of cumulative action.

A complete examination of the chest including an x-ray, blood examination and urinalysis were not informative. Subsequent follow-up examinations were also negative. In laboratory animals[9] subjected to high exposures of butadiene, irritation of all of the mucous membranes and respiratory tract occurs along with varying degrees of narcosis. Acute deaths are due to pulmonary edema. Delayed deaths are due to chemical pneumonia following pulmonary irritation. Experimentation with butadiene in laboratory animals indicates that butadiene is not a safe general anesthetic because there is not complete muscular relaxation even in the fourth stage. Death ensues rapidly when the laboratory animal is kept in deep anesthesia for any length of time.

Wilson and associates[6] stated that workmen anesthetized with or suffering from exposure to butadiene should recover completely, providing they are removed from exposure while respiration and heart action are still strong. Oxygen by inhalation should be administered until the pulse and blood pressure remain normal and the color is good. Symptomatic treatment is indicated.

Special precautions need to be observed in handling the compound from a fire and explosive standpoint. These include enclosure and mechanical exhaust ventilation and will in most cases automatically control the health hazard. There is no apparent systemic injury to humans in concentrations below 5,000 ppm. Any complaints which include eye and respiratory irritation, headache and vertigo might be considered as indicative of excessive exposure.

TABLE I.

COMMON PLASTICS	USES	PROPERTIES
Acrylics	Aircraft turrets, auto tail lights, brush backs, signs (Dynel, Acrilan, Orlon textiles).	Optical clarity, good weather resistance, wide color range, shatter resistance, machinability.
Alkyds and Rosin Modifications	Linoleum surfacings, paints for refrigerators and autos, ignition parts, magneto rotors.	Fast curing, good dimensional stability, good electrical insulation, good heat resistance.
Aminos (Urea and Melamine)	Buttons, dishes, laminated table tops, housings for kitchen appliances.	Unlimited color range, good electrical insulation, resistance to organic solvents.
Cellulose Plastic Materials	Display packaging, irrigation pipe, frames for eye-glasses (rayon and acetate textiles).	Toughness, high impact strength, ease of fabrication, lustrous finish, good electrical insulation.
Coumarone-Indene and Petroleum Resins	Asphalt floor tiles, aluminum paints, waterproof coatings, printing inks.	Resistance to water and caustic cleansers, compatibility with compounding ingredients, glass.
Epoxies	Printed circuit backing, adhesives, surface coatings, transformer and motor laminates.	Excellent adhesion, resistance to chemicals and heat, can be cured at room temperatures.
Fluorocarbons	Pump diaphragms, chemical tubing, high temperature insulation.	Extreme resistance to corrosive agents and solvents, wide temperature range, high impact strength.
Nylon	Gears, slide fasteners, combs, tumblers, tennis racket strings (nylon textile).	Good strength and toughness over wide temperature range, wear resistance, self-lubricating.
Phenolic and other Tar Acid Resins	Telephone handset, radio-TV cabinets, shell molding, dials, grinding wheels, plywood.	Hard and rigid, good temperature range, strong, good electrical insulation, low water absorption.
Polyethylene	Squeezable bottles, semi-rigid kitchenware, packaging, coaxial cables.	Inert to solvents, flexible and tough over wide temperature range, nontoxic, odorless, tasteless.
Polyester Resins	Reinforced plastics for auto bodies, boats, translucent panels (Dacron textiles).	Weather resistance, can be formed with low pressure, strong, colorful, compatible with many fillers.
Silicones	Insulation for generator coils, auto polishes, waterproof coatings, circuit breakers.	Extreme heat resistance, low water absorption, good dielectric properties over wide frequency range.
Styrene Resins	Kitchen housewares, refrigerator parts, toys and novelties, wall tiles, lighting fixtures.	Lightest of commercial plastics, excellent moldability, unlimited color range, tasteless, odorless.
Vinyl Resins	Floor tile, packaging film, rainwear, toys, upholstery material, pipe and pipe fittings, valves, electrical insulation, sponge, machine and structural parts, metal and fabric coatings.	Tough and strong, unlimited color range, excellent electrical insulation, resistance to chemicals, oil and weathering.

C. Miscellaneous Types

SOME of the newer synthetic resins which have been physiologically studied are the silicones, the polyethylene gylcols (carbowax compounds), and teflon (polytetrafluoroethylene). Rowe *et al*[10] found upon feeding guinea pigs for 50 days in amounts up to 3% of the daily diet no indication of toxicity with DC resins 993 and 2102. They also found that DC Pan Glaze possessed a very low order of oral toxicity when fed to the rat. Shaffer and Critchfield[11] concluded from their study of carbowax compounds 1,000, 1,540, 4,000 and 6,000 that no significant gastrointestinal absorption occurred when fed to rats. They also administered intravenously compounds 1,000 and 6,000 to humans and found they were readily excreted to a high degree.

Polytetrafluoroethylene (Teflon) is a synthetic resin with exceptional resistance to both heat and chemicals. It is being used for electrical insulation, for special types of tubing, for coating molds and bread pans, and for gasket materials in jet engines. Stokinger[12] has described the ill effects which may result when Teflon is heated to about 360° F as well as from exposure to the finely divided polymer itself. These effects resemble, in the case of the polymer, those of metal fume fever; in the case of the sublimate (resulting from heating the polymer) those of hydrogen fluoride poisoning. In using Teflon, adequate ven-

tilation is necessary to avoid ill effects. Lehman[1] reports that baking tests have shown no significant increase of the fluoride level of bread baking pans which have been coated with Teflon.

Plasticizers

LEHMAN in July, 1951,[1] stated that plasticizers presented more serious toxicological problems than the resins because there is always the possibility that these materials may be leached out by food substances. The plasticizers which have had adequate pharmacological study demonstrating their harmlessness in the amounts now used in finished commercial films are:

Ethyl Phthalyl ethyl glycollate.
p-tertiary Butyl phenyl salicylate.
3-(2-Xenoxyl)-1,2-epoxypropane.
2-Ethylhexyl diphenyl phosphate.
Butyl phthalyl butyl glycollate.
Glycerol monooleate.
Acetyl tributyl citrate.
Di-iso-butyl adipate.

Lehman classified as unsuitable for food use the following:

Dicyclohexyl phthalate.
Dibutyl phthalate.
Methyl phthalyl ethyl glycollate.
Di-iso-octyl phthalate.
Dioctyl adipate.
Dibutyl sebacate.
Dioctyl sebacate.
Dicapryl sebacate.

Seifter in 1943[13] made acute toxicity, chronic toxicity and skin irritation studies on dibutyl phthalate. His summary and conclusions were:

1. Dibutyl phthalate is a mild primary skin irritant for animals and humans.

2. Dibutyl phthalate taken by mouth is acutely toxic.

3. Dibutyl phthalate ingested daily over long periods of time in amounts up to 2.5 gm. per kilogram of diet, does not produce chronic poisoning.

Smith[14] studied dibutyl phthalate and found the acute lethal oral dose to be about 8 gm. per kilogram. When administered chronically in the diet the maximum concentration which did not significantly reduce normal growth was 0.25%. The feeding of dibutyl phthalate even in the highest dietary concentrations did not provoke specific gross or microscopic pathologic changes. His findings also suggested that dibutyl phthalate was metabolized in the body in much the same way as the fat normally ingested in the diet. He did not feel that it was safe to incorporate dibutyl phthalate in films for wrapping foods even if the calculated safety factor was in excess of 1400.

Seifter[13] in studying dicapryl phthalate made the following summary and conclusions:

1. Dicapryl phthalate is not a primary skin irritant for animals or humans.

2. When taken by mouth dicapryl phthalate has a low acute toxicity.

3. Ingested daily over long periods of time, in amounts up to 2.5 gm. per kilogram of diet, dicapryl phthalate does not produce chronic poisoning.

Seifter in 1943[13] came to the following conclusions concerning triethylene didecoate:

1. It is not a primary skin irritant for animals or humans.

2. When taken by mouth, it has a low acute toxicity.

3. Ingested daily over long periods of time in amounts up to 2.5 gm. per kilogram of diet, it does not produce chronic poisoning.

Smith[14] found that the acute lethal oral dose of butyl stearate was greater than 32 gm. per kilogram. When butyl stearate was administered chronically in the diet, the maximum concentration which did not significantly reduce normal growth was more than 6.25%. Butyl stearate in the highest dietary concentration did not provoke specific gross or microscopic pathologic change and in dietary concentrations of 6.25% had no adverse effect on fertility or the number of viable young in the litter. There was in this concentration slight retarded growth of the young. He felt that, based on the above data, butyl stearate when incorporated in films for wrapping food appeared to possess little, if any, potential hazard for humans, the calculated safety factor being in excess of 1,400.

Smith[14] came to the conclusion that the acute lethal oral dose of methoxyethyl oleate was approximately 16 gm. per kilogram and when administered chronically in the diet of rats the maximum concentration, which did not significantly reduce normal growth, was 0.01% to 0.05%. He found renal calculi in three of seven rats fed 1.25% methoxyethyl oleate for more than six months. He felt that methoxyethyl oleate was hydrolized by pancreatic lipases as rapidly as triolein. He did not feel that methoxyethyl oleate should be incorporated in films for wrapping food.

Smith[14] concluded that the acute lethal oral dose of dibutyl sebacate was between 16 and 32 gm. per kilogram and that when administered chronically in the diet of rats, the maximum concentration which did not significantly reduce normal growth was 6.25%, and that when fed in the highest dietary concentration, there were no specific gross or microscopic pathologic changes. Dibutyl sebacate in dietary concentrations of 6.25% had no adverse effect on fertility or the number of viable young in the litter. It did cause a slight retarded growth of the young. Smith felt that this plasticizer was metabolized in the body in much the same way as fat normally ingested in the diet, and that when it was incorporated in films for wrapping food appeared to possess little, if any, potential hazard for humans, the calculated safety factor being in excess of 1400. Mallette and Von Haam[15] state that dibutyl sebacate is a non-toxic plasticizer, with no irritating or sensitizing effect on the skin, and that dibutoxyethyl phthalate is a non-toxic plasticizer with no irritating or sensitizing effect on the skin.

Mallette and Von Haam[15] listed the following as non-toxic plasticizers:

Di-2-ethylhexyl adipate.
Dibutyl cellosolve azelate.

Cyclohexyl azelate.
2-ethylhexyl azelate.
Methyl isobutyl carbinol azelate.
Pentasol azelate.
Diethylene glycol dicaprate.
Dibutoxyethyl diglycol carbonate.
Octadecene nitrile.
Dibutoxyethyl phthalate.
Dicapryl phthalate.
Methylacetyl ricinoleate.
Dioctyl sebacate.
Dibutyl sebacate.
"Plasticizer 50 B" (Barrett).
"Plasticizer Ellicott H."
"Plasticizer SC" (Drew).
"Paraplex G-25" (Rohm & Haas).
"Paraplex G-40" (Rohm & Haas).
"Plastolein X-55" (Emery).

They stated that five of the plasticizers examined showed a moderately toxic effect in laboratory animals. They were dioctyl phthalate, butylbenzyl phthalate, "santicizer 140," "santicizer 141," and "flexol 8N8."

Di(2-ethyl hexyl) phthalate (commercially referred to as dioctyl phthalate, DOP, and 2-ethyl hexyl phthalate) was studied by Hodge[16] with respect to acute oral and intraperitoneal toxicity in rats and mice. He concluded that it had a very low order of toxicity. Shaffer, Carpenter and Smyth studied it in 1945.[17] Their conclusions were that it is a chemical of low toxicity and that the health hazards involved in its use as a plasticizer are slight. Such injurious action as it does exert within the body appears to be due to the alkyl part of the molecule rather than to the phthalate portion.

Mallette and Von Haam[15] found that dioctyl phthalate had a moderately toxic effect in laboratory animals and that the intraperitoneal injection of dioctyl phthalate proved fatal in doses higher than 2 gm. per kilogram of body weight. Lower doses produced weight loss, leucocytosis, severe anemia and hematuria from which the animals recovered after a month or two. No delayed effect or permanent injury was noted in the surviving animals. They also showed that dioctyl phthalate had a moderate skin irritating effect.

Carpenter, Weil and Smyth[18] reported the results of feeding Di(2-ethyl hexyl) phthalate for two years to rats and for one year to both dogs and guinea pigs. They obtained relatively uniform responses from all three species, with the two-year "no effect" level for rats falling between .06 and .20 gm. kilogram per day, and the one-year "no effect" level for both dogs and guinea pigs approximating .06 gm. per kilogram per day. Lehman[1] reports that food packaging films containing this compound as a plasticizer are satisfactory for wrapping foods with a high water content, but are unsatisfactory for use with foods having a high fat content, because of the ready solubility of the plasticizer in fats and oils. Halpern and Weiss[19] found no irritation or induced sensitivity when 200 humans were patch tested with vinyl film containing dioctyl phthalate as the plasticizer.

In 1952 Mallette and Von Haam[15] reported on other plasticizers, several of which they found to be moderately toxic to rats in acute exposures. These were:

1. Butylbenzyl phthalate was fatal in rats after intraperitoneal administration of doses higher than 1.8 gm. per kilogram of body weight. Oral administration of more than 4 gm. per kilogram of body weight proved equally fatal. The animals died after four to eight days, showing weight loss, apathy and leucocytosis. The histological examination of the organs revealed toxic splenitis and degenerative lesions of the central nervous system with congestive encephalopathy, myelin degeneration and glial proliferation.

2. "Santicizer 140" (monotolydiphenyl phosphate) proved fatal in intraperitoneal doses of higher than 1 gm. per kilogram of body weight. Oral doses up to 4 gm. were supported. Toxic animals became lethargic on the second or third day and a profuse diarrhea developed. They died with symptoms of paralysis. Autopsy showed a generalized capillary paralysis with severe edema and numerous hemorrhages in the brain.

3. "Santicizer 141" (2-ethyl hexyl diphenyl phosphate or mono octyl diphenyl phosphate) killed animals after intraperitoneal administration of doses higher than 2.4 gm., but oral administration of 4 gm. per kilogram of body weight was tolerated. With the intraperitoneal administration the animals became paralyzed and lethargic. Recovery from non-fatal lesions was delayed. The histopathological examination demonstrated a severe acute hemorrhagic encephalopathy with cerebral edema, ganglion cell degeneration and small hemorrhages. As delayed effects, focal gliosis and persistent foci of myelin degeneration could be observed. Large fatal doses also proved a powerful hemolytic agent with marked vascular hemolysis, hemoglobinuria, and hemosiderosis of the spleen.

4. "Flexol 8N8" (N,N-di-beta-(2-ethyl hexyl) ethyl 2-ethyl hexylamide) proved fatal in doses higher than 4 gm. per kilogram of body weight. The animals developed convulsions followed by paralysis. The histological examination of the brain gave the picture of toxic hemorrhagic encephalopathy with edema, swelling of ganglion cells and small hemorrhages.

Their conclusions were that these four plasticizers proved moderately toxic in doses from 0.6 to 2.4 gm. per kilogram of body weight. The toxic reaction was displayed by the erythrocytes, the blood capillaries and the central nervous system. They also found in their studies 17 plasticizers to be slight or moderate skin irritants. Three—"Flexol 8N8," "Paraplex G-25," and "Paraplex G-40"—proved to be severe skin irritants.

A moderate sensitizing effect on the skin was found by Mallette and Von Haam[15] to exist with diethylene glycol dicaprate, methylacetyl ricinoleate, "Paraplex G-25," "Paraplex G-40," and "Santicizer 140."

Seeler *et al*,[20] in their studies on the chronic toxicity of acetyl tributyl citrate came to the following conclusions:

1. Rats showed no toxic effect after eating diets containing 200 ppm, 2,000 ppm, and 20,000 ppm of acetyl tributyl citrate for two years.

2. Dogs were given a daily oral dose of 140 mg. of acetyl tributyl citrate for two years without evidence of toxic effect.

Seeler *et al*,[21] on making chronic toxicity studies of butyl phthalyl butyl glycollate came to the following conclusions:

1. Rats fed diets containing 200 ppm, 2,000 ppm, and 20,000 ppm of butyl phthalyl butyl glycollate for two years showed no toxic effect.

2. Dogs were given a daily oral dose of 140 mg. of butyl phthalyl butyl glycollate for two years without evidence of toxic effect.

The results of both acute and chronic oral feeding, as well as skin absorption and irritation with 2-ethylhexyl diphenyl phosphate (Santicizer 141) are given by Treon *et al*.[22] These investigators found the compound to be innocuous when administered orally to rabbits and rats in a single large dose. No effects, either irritative or systemic, were found as the result of keeping it in contact with the abraded skin of rabbits for seven to 24 hours. Rats fed for two years on a diet containing 1%, 0.125%, and 0.0625% by weight of the compound showed no pathology, but did show a retarded growth rate at the 1% level. Dogs fed the compound at dietary levels of 2.5% for two years showed retarded growth, but those fed a 1.5% level grew normally.

Treon, Cappel, and Sigmon have found[23] that a high percentage of Santicizer 141 is excreted in the feces of both rabbits and humans unchanged. Halpern and Weiss[19] have shown that films plasticized with Santicizer 141 are not irritating and do not induce sensitivity in humans.

Stabilizers

MANY different materials are being used as stabilizers for plastics. The specific type of plastic with particular reference to its use, governs to a large degree the stabilizer to be selected. Obviously, uses such as that of food packaging where there might be leaching of the stabilizer into the food require materials that are not harmful if ingested. Lehman[1] states that the following are not objectionable for food packaging:

Aluminum monostearate.
Calcium acetate.
Calcium ethyl acetoacetate acetate.
Calcium carbonate.
Calcium stearate.
Calcium glycerophosphate.
Mono- di- and tricalcium phosphate.
Calcium oleate.
Calcium ricinoleate.
Magnesium stearate.
Magnesium glycerophosphate.
Mon-, di-, and trimagnesium phosphate.
Disodium hydrogen phosphate.
Ammonium potassium phosphate.

Some of the most efficient stabilizers from the standpoint of performance, particularly for the vinyl resins, are the heavy metal salts of barium, strontium, lithium, cadmium, and lead. All of these compounds, however, possess a relatively high degree of toxicity and they are objectionable for use in items involving contact with human food.[1] There are, however, many plastic formulas for uses in products where toxicity is not of particular significance and consequently, one or more of these stabilizers can be safely used. Obviously, when these heavy metals are used, adequate, safe handling procedures must be utilized in the manufacturing plant. These involve the practice of good industrial medical and hygiene procedures.

Lehman[1] has also stated that zinc oxide, zinc stearate and salts of manganese and copper are not objectionable as stabilizers in food wrapping material if not more than 50 ppm of the metal leaches out into the food.

Some of the newer stabilizers for vinyl resins are the organic tin compounds. Elemental tin has been used for many years as a lining for food containers and is relatively harmless. The organic tin salts, however, while not known to be harmful have not thus far been shown to be sufficiently safe for use in food container applications. The plant manufacturing operations involving the use of the organic tin stabilizers may present some industrial health problems but again the degree or extent of these is not known at the present time.

Solvents

IN THE processing of plastics into products, a number of chemicals are used. These include aromatic hydrocarbons, chlorinated hydrocarbons, petroleum distillates, ketones, acetates and alcohols. These compounds are all toxic in varying degrees and present certain medical problems in their handling. Specific methods for determining the atmospheric concentrations of these chemicals can be found in Jacob's[24] text.

The American Conference of Governmental Hygienists[25] suggested the maximum allowable concentrations of many of the more common solvents in Table II.

The aromatic hydrocarbons are used extensively in the processing of plastics. Of these, benzene (benzol C_6H_6); toluene (toluol, $C_6H_5CH_3$); and xylene (xylol, $C_6H_4(CH_3)_2$) are the principal ones. These compounds are of value because of the fact that they are excellent solvents.

As pointed out by Wilson[26] benzol poisoning may result from absorption of benzene by either the respiratory tract, the alimentary tract, or probably the skin. Cases of poisoning in human beings have been found with exposures to atmospheric conditions as low as 25 ppm. Concentrations of 50 to 100 ppm are considered to be safe for the average person. Individual susceptibility varies. Acute benzol poisoning is rare.

As pointed out by Wilson[27] the pathologic manifestations of exposure to toluene are a matter of controversy. The conclusions reached by various authors are in decided variance with one another. Toluene poisoning is probably caused by absorption through the respiratory system, the skin, and the alimentary tract. The absorbed

TABLE II.
SUGGESTED MAXIMUM ALLOWABLE CONCENTRATIONS
(Parts per million parts of air)

Acetone	1000
Acrylonitrile	20
Amyl acetate	200
Amyl (iso) alcohol	100
Benzene (benzol)	35
Butadiene 1,3	1000
Butyl acetate	200
Butyl alcohol	100
Carbon tetrachloride	25
Ethyl acetate	400
Ethyl alcohol	1000
Ethylene dichloride	100
Gasoline	500
Heptane	500
Hexane	500
Propyl (iso) alcohol	400
Methyl alcohol	200
Methyl ethyl ketone	100
Naphtha (petroleum)	500
Perchlorethylene (tetrachlorethylene)	200
Propyl acetate	200
Stoddard solvent	500
Tetrachlorethane	5
Tetrachlorethylene	200
Toluene	200
Trichlorethylene	200
Xylene	200

vapors exert a progressive depressant action on the central nervous system and the bone marrow. Toluene is also a pronounced irritant to mucous membranes. A factor to be considered whenever it is employed is individual susceptibility. Exposure to concentrations of toluene from 200 to 500 ppm for six to eight hours will in most persons cause tiredness and lassitude. Concentrations over 500 ppm for one to three hours are definitely dangerous and will cause symptoms attributable to depression of the central nervous system and the bone marrow.

Xylene[6] is stated to possess more severe narcotic properties than benzene. Xylene poisoning is relatively uncommon because its volatility is lower than that of benzene or toluene. Chronic poisoning does occur. There is some evidence that xylene exerts an action on the blood forming organs similar to that of benzene. Cases of aplastic anemia have been attributed to xylene vapors. There have been some cases reported in German literature of leukopenia and thrombocytopenia with no reduction in red cells.

The commonly used chlorinated hydrocarbons in the plastic industry are:

Carbon tetrachloride (tetrachlormethane) CCl_4.

Ethylene dichloride (dichlorethane) $C_2H_4Cl_2$.

Tetrachlorethane (acetylene tetrachloride) $C_2H_2Cl_4$.

Trichlorethylene (ethylene trichloride) C_2HCl_3.

Perchlorethylene (tetrachlorethylene) C_2Cl_4.

The most toxic of the group is tetrachlorethane, having, according to Matruchot,[28] a comparative toxicity of 6.0. Carbon tetrachloride is listed by the same author as having a comparative toxicity of 2.6, trichlorethylene of 1.0, perchlorethylene of 1.4, and ethylene dichloride of 1.6. According to Davis[29] and the U.S. Public Health Service,[30] the maximum allowable concentration of carbon tetrachloride is 100 parts per million. According to Elkins[31] this level is too high and should be reduced to 50 parts per million.

Many of the petroleum distillates are used. Gasoline (unleaded), hexane, heptane, Stoddard solvent, varsol, and naphtha are mixtures of hydrocarbons, paraffins, olefins, cycloparaffins (naphthenes), aromatics, and other impurities including sulphur. Cracked gasoline may also carry a fairly high percentage of benzol. These substances are frequently referred to by the general name of benzine. This is to be distinguished from benzene (benzol). These distillates are narcotics, and it is possible to produce complete anesthesia with heavy doses. However, their anesthetic properties are much less than those of the aromatic and chlorinated hydrocarbons. For this reason they may be more desirable for commercial use. Drinker and associates, in studying the effects of gasoline vapors[32] found that concentrations from 270 to 500 ppm were tolerable. Neuromuscular symptoms began at about 900 ppm; mild intoxication at 2,000 ppm.

Acetone, methyl ethyl ketone, methyl isobutyl ketone, and methyl amyl ketone are also used. In our experience no cases of occupational disease have been attributed to the ketones.

Methyl, ethyl, propyl, isopropyl, butyl and isoamyl acetate may be used. These solvents are not considered severely toxic and in most cases the allowable concentrations are based more on comfort than on toxic requirements.

Methyl, ethyl, isopropyl, amyl and butyl alcohol are all used at times in plastics manufacture. Methyl alcohol is a source of grave injury to many industrial workers. It has a specific action on the optic nerve, and with long enough exposure, blindness may result. The action is that of inflammation of the optic nerve followed by atrophy. A considerable amount of methyl alcohol poisoning was noted during prohibition days when wood alcohol was used in large amounts with subsequent optic nerve degeneration and blindness. The other alcohols, because of their volatility are not considered to be especially dangerous. Cases of narcotic poisoning have been attributed to them but not proved. The higher alcohols, like butyl and amyl, have in addition an irritant action as well as some poisonous action on the protoplasm.

Summary

THE ADVENT of a great industry for the manufacture of articles of all kinds made from various chemical compounds has created many new problems for the industrial physician and the industrial hygienist. Many of the compounds used are new and very little, if anything, is known about their toxicity. Also, since there are no set formulas or recipes, each plastic article may have a different composition.

This paper attempts to discuss the toxicity of the more common compounds now being used in

plastics manufacture. Resins, plasticizers, stabilizers and solvents are discussed in some detail in regard to their toxic properties. The scarcity of knowledge of the properties of many of the chemicals is sufficient reason for further study.

It is not enough for industry to make better things cheaper; it must also make them safely.

Resume

ARTICLES made of a variety of chemical combinations commonly called plastics have found increasing favor with the consuming public. Many useful products can be made stronger, better looking, longer wearing and at lower costs employing these versatile new materials. The imaginative creativeness of the human mind is evident in our new world of plastics. To create these man-made marvels, the research chemists and development engineers have not only used known chemicals but also have created new ones.

Unfortunately, many of the chemicals currently used are known to be highly toxic. Even worse, the toxicity of many of the newer chemicals is not even known. Thus, industrial medicine and hygiene face serious problems both from known and potential toxic hazards. Considerable information has been published concerning some of the chemicals now being used in plastic manufacture, and at the present time many chemicals are undergoing toxicological investigation.

The authors of this paper have accumulated information on many of the resins, plasticizers, stabilizers and solvents being used in the manufacture of numerous plastic articles. It will be noted that the information is meager in some instances while in others it is quite complete, but, to our knowledge, this comprehensive summary on the toxicology of plastics has not heretofore been attempted.

Among the authors' conclusions is that industry must maintain strong Departments of Industrial Medicine and Hygiene to control toxicological hazards. Many industries are diversifying manufacturing activities and entering fields of endeavor for which previous experiences may not have prepared them. Highly toxic chemicals cannot be successfully handled in a haphazard manner and it is essential to invest money for toxicological investigation, because to be without such programs is foolhardy and more expensive in the long run. No industry can afford to endanger the health of its people by knowingly exposing them to toxic materials.

It is not enough for research chemists to discover a chemical combination, which will create a new sales masterpiece. The industrial hygienist must also determine the toxicity of the chemicals involved and designate ways and means of handling them safely. If the sales potential of a new plastic does not warrant toxicological study, then the product should not be produced.

Another conclusion of the authors is that much additional toxicological study is necessary on plastics, and it is hoped that the toxicology of plastics can be added to and made more complete, year after year.

References

1. LEHMAN, ARNOLD J.: Chemicals in Foods: A Report to the Association of Food and Drug Officials on Current Developments. *Association of Food & Drug Officials of the United States*, Vol. XV, No. 3, July, 1951.

2. SEELER, ALBERT O.: Clinton, Marshall, Boggs, Joseph, Drinker, Philip: Experiments on the Chronic Toxicity of a Copolymer of Vinyl and Vinylidene Chloride. Unpublished.

3. PATTY, F. A., YANT,, W. P., and WAITE, C. P.: Acute Response of Guinea Pigs to Vapors of New Commercial Organic Compounds. *U.S. Public Health Reports*, 45:1963 (1930).

4. CARPENTER, C. P., SMITH, H. F., and POZZANI, U. C.: The Assay of Acute Vapor Toxicity and the Grading and Interpretation of Results on 96 Chemical Compounds: *J. Indust. Hyg. & Tox.*, 31:343, 1949.

5. REINHARDT, R. C.: Handling Vinylidene Chloride: *Chemical & Engineering News*, 25:2136 (July 28) 1947.

6. WILSON, R. H., HOUGH, GLENN V., and MCCORMICK, WM. E.: Medical Problems Encountered in the Manufacture of American-Made Rubber. *Indust. Med.*, 17:6 (June) 1948.

7. WILSON, R. H.: Health Hazards in the Manufacture of Synthetic Rubber. *J.A.M.A.*, 124:701 (March 11) 1944.

8. DUDLEY, H. C., NEAL, P. A.: Toxicology of Acrylonitrile: *J. Indust. Hyg. & Tox.*, 24:27 (February) 1942.

9. CARPENTER, C. P., SHAFFER, C. B., WEIL, C. F., SMYTH, H. F.: Studies on Inhalation of Butadiene with a Comparison of its Narcotic Effect. *J. Indust. Hyg. & Tox.*, 26:69, 1944.

10. ROWE, V. K., SPENCER, H. C., and BASS, S. L.: Certain Commercial Silicones and Hydrolyzable Silicone Intermediates: *J. Indust. Hyg. & Tox.*, 30:332 (November) 1948.

11. SHAFFER, C. B., CRITCHFIELD, F. H., and CARPENTER, C. P.: The Absorption and Excretion of the Solid Polyethylene Glycols. *J. Am. Pharm. Assoc.*, 36:152 (May) 1947.

12. STOKINGER, H. E.: Teflon—A Plastic with an Inhalation Hazard. *Occupational Health*, 13:86 (June) 1953.

13. SEIFTER, JOSEPH: Toxicity of Plasticizers. Unpublished, 1943.

14. SMITH, CARL C.: Toxicity of Butyl Stearate, Dibutyl Sebacate, Dibutyl Phthalate, and Methoxyethyl Oleate: *A.M.A. Arch. Indust. Hyg. & Occup. Med.*, 7:4, 310 (April) 1953.

15. MALLETTE, F. S., and VON HAAM, E.: Studies on the Toxicity and Skin Effects of Compounds Used in the Rubber and Plastics Industries: *A.M.A. Arch. Indust. Hyg. & Occup. Med.*, 6:9, 231 (September) 1952.

16. HODGE, HAROLD C.: Acute Toxicity for Rats and Mice of 2-Ethyl Hexanol and 2-Ethyl Hexyl Phthalate. *Proc. Soc. Exp. Biol. & Med.*, 53:20, 1943.

17. SHAFFER, C. B., CARPENTER, C. P., and SMYTH, JR., H. F.: Acute and Subacute Toxicity of Di(2-Ethyl Hexyl) Phthalate, *J. Indust. Hyg. & Tox.*, 27:5 (May) 1945.

18. CARPENTER, C. P., WEIL, C. S., and SMYTH, H. F.: Chronic Oral Toxicity of Di(2-Ethyl Hexyl) Phthalate for Rats, Guinea Pigs and Dogs. *A.M.A. Arch. Indust. Hyg. & Occup. Med.*, 8:219 (September) 1953.

19. HALPERN, L. K., and WEISS, R. S.: Toxicity of 2-Ethyl Hexyl Diphenyl Phosphate. IV. Skin Sensitization Studies of Santicizer 141. *A.M.A. Arch. Indust. Hyg. & Occup. Med.*, 8:284 (September) 1953.

20. SEELER, ALBERT O., CLINTON, MARSHALL, BOGGS, JOSEPH, DRINKER, PHILIP: Experiments on the Chronic Toxicity of Acetyl Tributyl Citrate. Unpublished.

21. SEELER, ALBERT O., CLINTON, MARSHALL, BOGGS, JOSEPH, DRINKER, PHILIP: Experiments on the Chronic Toxicity of Butyl Phthalyl Butyl Glycollate. Unpublished.

22. TREON, J. F., DEUTRA, F. R., and CLEVELAND, F. P.: Toxicity of 2-Ethyl Hexyl Diphenyl Phosphate; I. Immediate Toxicity and Effects of Long Term-Feeding Experiments: *A.M.A. Arch. Indust. Hyg. & Occup. Med.*, 8:170 (August) 1953.

23. TREON, J. F., CAPPEL, B. S., and SIGMON, H.: Toxicity of 2-Ethyl Hexyl Diphenyl Phosphate: II. Metabolic Fate in Man and Animals: *A.M.A. Arch. Indust. Hyg. & Occup. Med.*, 8:268.

24. JACOBS, MORRIS B.: The Analytical Chemistry of Industrial Poisons, Hazards and Solvents: Chemical Analysis, Vol. I, 2nd Revised Edition. Interscience Publishers, Inc., New York, 1949.

25. American Conference of Governmental Industrial Hygienists: Threshold Limit Values for 1954. *A.M.A. Arch. Indust. Hyg. & Occup. Med.*, 9:530 (June) 1954.

26. WILSON, R. H.: Benzol Poisoning in Industry. *J. Lab. & Clin. Med.*, 27:12, 1517 (September) 1942.

27. WILSON, R. H.: Toluene Poisoning. *J.A.M.A.*, 123:1106 (Sec. 25) 1943.

28. HAMILTON, ALICE, and JOHNSTONE, R. T.: Industrial Toxicology, p. 636. Oxford University Press, 1945.

29. DAVIS, P. A.: Carbon Tetrachloride as an Industrial Hazard. *J.A.M.A.*, 123:962, 1943.

30. GAFAFER, WM. (Editor): Manual of Industrial Hygiene, p. 264. W. B. Saunders Company, 1943.

31. ELKINS, H. B.: Maximum Allowable Concentrations: I. Carbon Tetrachloride. *J. Indust. Hyg. & Tox.*, 24:233, 1942.

32. DRINKER, P., YAGLOU, C. P., and WARREN, M. F.: The Threshold Toxicity of Gasoline. *J. Indust. Hyg. & Tox.*, 25:225, 1943.

Inguinal Herniorrhaphy

—CONSIDERATIONS OF THE INGUINAL SHUTTER AND VARIATIONS IN TISSUE STRENGTH

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THIS opportunity enables me to present, under fitting circumstances, an original method of herniorrhaphy developed by Dr. George P. Myers, retired Chief Surgeon for the New York Central System.

My interest in the problem of hernia began in 1935 when I had operated upon a railroad man on three occasions for an indirect inguinal hernia, with prompt recurrence each time. You can imagine what happened. The Claims Department wanted to know why so much money was being spent on a single hernia. Next, Dr. Myers bluntly remarked that he had thought I was able to repair a hernia after all of the training I had had. When I admitted that this particular hernia had me baffled, Dr. Myers offered to show me how to repair it. Interestingly enough, he had never seen a recurrent indirect inguinal hernia. I realized why this was so, following his demonstration.

Unfortunately, the hospital records of Dr. Myers' cases have been destroyed so that an accurate assay of his work cannot be made. During the nine years I worked for him, I performed most of the periodical examinations and I encountered no case of recurrence. I have incorporated his method in my technique with excellent results.

Our investigations have approached the problems of inguinal hernia through the eyes of the surgeon working in the operating room. This practical method has led to differences in certain explanations of fundamental problems in this field. For those who are interested, a number of these problems have been published.[4]

Since it will be impossible to cover this subject completely because of time limitations, only selected items will be presented. Our technique of herniorrhaphy is based upon two primary maneuvers. If you will keep these in mind, I believe this presentation will be more helpful.

The first maneuver is related to the problem of how completely the surgeon should interfere with the local physiology. For example, the techniques of Bassini, Cooper, Ferguson and Halsted close only the inguinal canal and leave the internal hiatus area free.

We will show that the canal and hiatus form a single functional unit which should be closed.

The second maneuver evaluates and remedies a lack of strength in the tissue planes. We believe that when tissue planes are weak enough, no surgeon however expert, can prevent recurrences by ordinary technical procedures.[1] Under these circumstances reinforcement by means of a patch is indicated.

Terminology

THE TWO most important instruments that project our ideas in surgical problems are word descriptions and drawings. We have found gross inaccuracies in both which we feel have been due to the wide variations in the various structures, especially the internal oblique, and to gross carelessness. This situation creates confusion and must be corrected if we are to achieve accuracy in our teaching programs.

Anatomy

A BRIEF review of the anatomy as we see it will help to explain our position.

1. The internal oblique muscle is bare and has no fascia of its own. It inserts into the rectus fascia with little or no aponeurosis. When the cord is elevated it leaves behind that portion which the surgeon calls the internal oblique muscle. The portion that arches over the inguinal canal alone varies from complete development to total absence; the portion that covers the internal hiatus is always present. The entire muscle is the motor mechanism which closes the inguinal shutter which will be discussed shortly. (See Fig. 1.)

2. The floor of the inguinal canal (frequently called "transversalis fascia") is composed of a triangular fascia which is more easily demonstrated at operation than in the cadaver. It originates in the region of the inguinal ligament and inserts into the rectus fascia. It always separates from its insertion to permit the presence of a direct hernia. Its lateral edge forms the medial border of the internal hiatus. The true transversalis fascia of Cooper lies directly posterior to this structure. (See Fig. 2.)

3. The internal hiatus is a triangular aperture whose size is determined by the origin of the transversus abdominis. There are instances when the apex of this triangle may reach the ilium. It

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Fig. 1.
Divisions of the internal oblique muscle: (1) the cremaster; (2) the minor or inguinal division; (3) the "main" body.

Fig. 2.
Anatomical relationship of structures posterior to the internal oblique muscle (removal). (1) Inguinal floor; triangular fascia. (2) Internal hiatus. (3) Rectus abdominis fascia and muscle.(4) Transversus abdominis muscle and aponeurosis. (5-5-5) Semilunar line.

is this portion of the inguinal shutter which is not closed during classical procedures. There is no sphincter muscle here. (See Fig. 2.)

4. The semilunar line, which corresponds with the lateral border of the rectus abdominis, projects downward to the internal hiatus and angles downward and medialward above the inguinal canal to the symphysis. This line is the site of all direct hernias. At the semicircular fold of Douglas they are called Spigelian; between here and the hiatus they are called interstitial; and below this they are called inguinal. An interesting point in comparative anatomy between this line and the inguinal ligament will be demonstrated in Dr. Myers' operation. (See Figs. 2, 5.)

5. The ratio between the aponeurosis and muscle of the transversus abdominis varies considerably and is of importance in one of our techniques. The lower border forms the lateral portion of the inguinal shutter. (See Fig. 2.)

6. The rectus muscle and fascia are often called the internal oblique aponeurosis or the conjoined tendon—terms we disapprove. The lower border of this muscle forms the medial half of the inguinal shutter to be described shortly. (See Fig. 2.)

Physiology

SIR ARTHUR KEITH,[3] British anatomist and surgeon, first described in detail the component parts and the physiology of the inguinal shutter. The shutter is formed by the lower margins of the transversus and rectus abdominis muscles. Contraction of the internal oblique muscle approximates this shutter to the inguinal ligament. The more powerful portion of the internal oblique controls the lateral half of the shutter; the least powerful portion controls its medial half.

We contend that when the classical operations are used which close only the inguinal canal a stress factor is set up by the unanchored lateral half of this functional unit which often results

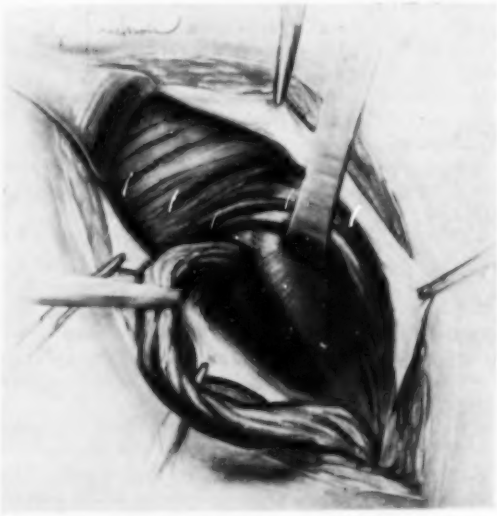

Fig. 3.
The conjoined area of the inguinal region. All structures concerned with inguinal hernia meet here except the inguinal ligament.

in recurrence.[1] We believe that this entire area should be permanently closed. (See Fig. 2.)

Strength of Tissue Planes

THE TISSUE planes in the inguinal region are subject to variations in substance and also to physical stress due to occupation and sports. It is of interest that evaluation of some of these factors must be made outside the operating room. On occasion one of these factors may be sufficient to recommend the need for reinforcement but more often a combination determines when a patch should be used. Up to the present, the fol-

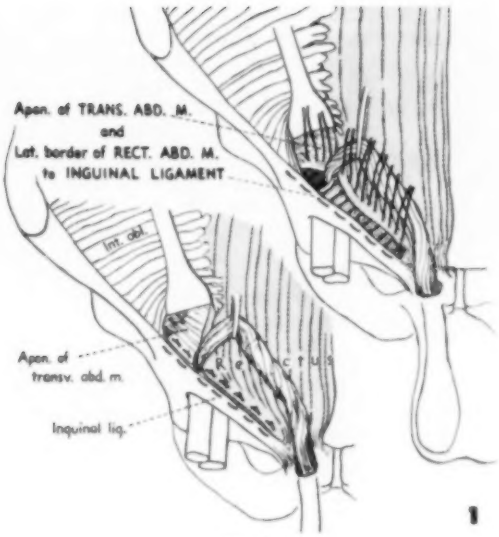

Fig. 4.

McLaughlin's Technique: The rectus abdominis fascia is sutured to the inguinal ligament. The transversus aponeurosis is sutured to the region of the inguinal ligament posterior to the internal oblique. The spermatic cord emerges at the level of the femoral vessels. The external oblique aponeurosis is closed beneath the cord in all these variations.

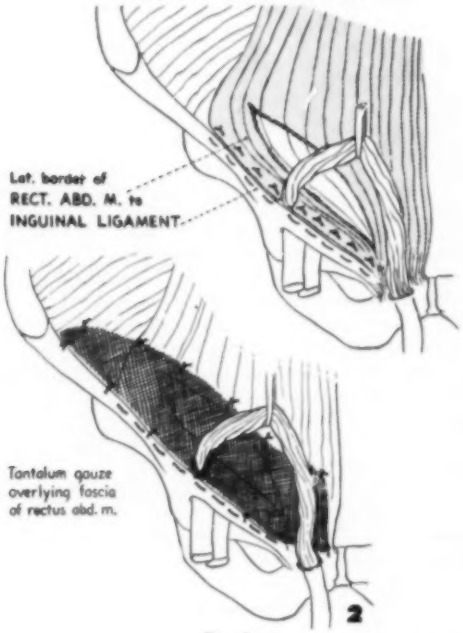

Fig. 5.

Myers' Technique: (A) The rectus fascia is sutured to Poupart's ligament beginning at the pubic tubercle and extending to within one or two centimeters of the iliac spine. The internal oblique "disappears" when the sutures are tied. A relaxing incision in the rectus fascia may be necessary. (B) Metal gauze patch spreads over the entire area and extends over the symphysis pubis. The spermatic cord emerges from a slit in the mesh.

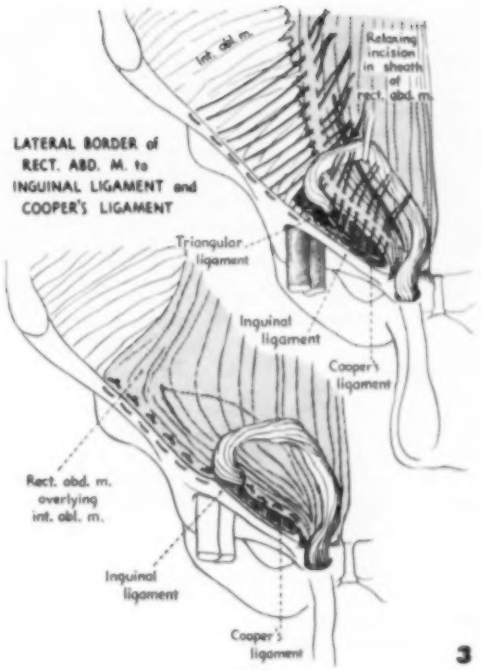

Fig. 6.

Krieg Technique: The rectus fascia is sutured to Cooper's ligament close to the femoral vessels (Anson & McVay). Internal hiatus is closed by the McLaughlin or Myers' Technique.

lowing factors are considered as indication for a patch.

1. Hyposthenic habitus.
2. Congenital hypoplasia and aplasia of local tissues.
3. Heavy labor and/or violent exercise.[2]
4. Senile atrophy of local tissues.
5. Trauma due to large hernia or operation.
6. Unilateral multiple hernias, particularly of the direct variety.
7. Bilateral hernias.
8. Local atrophy due to a truss.
9. Pain following a successful repair (rare).
10. When clinical experience casts the least doubt as to tissue strength.

Technique

OUR TECHNIQUE is accomplished in three steps.

1. The inguinal region is thoroughly explored for defects which are repaired so as to restore the structures to as nearly their normal state as possible.

2. A decision must then be reached as to whether a patch will be necessary.

3. One of three variations of our method of herniorrhaphy is then chosen, depending upon local anatomical conditions. The common factor in each variation is complete closure of the inguinal shutter.

Variation One: McLaughlin's Technique.[5]

The indications for this procedure are (a) individual under 40 years of age, (b) hypersthenic

habitus, (c) an adequate transversus aponeurosis at least two centimeters in length. (See Fig. 4.)

Variation Two: Myers' Technique.

The indications for this procedure are (a) when a patch is required, (b) when previous operation prevents definitive dissection, (c) inadequate transversus aponeurosis. (See Fig. 5.)

Variation Three: Krieg Technique.

The indication for this procedure is an inadequate inguinal ligament in the canal region due reasons of development or previous operative trauma. (See Fig. 6.)

The indications for each variation are more elastic than this terse presentation suggests.

Results

A SURVEY of our cases was completed in January, 1954, and has been unusually complete. The larger number have been compensation cases which were checked through the courtesy of Dr. Marion M. Jocz and Mr. William Hotchkiss, Chrysler Corporation, to whom we are deeply indebted. No women or children were included in the survey.

The practice of closing the inguinal shutter as a routine procedure began in September, 1942, and from that time until June, 1948, 549 hernias were repaired. There were eight recurrences; one of these was a femoral hernia. Beginning in June, 1948, our approach to the problem of tissue strength became organized and objective. From that period until June, 1952, there have been no recurrences in 111 hernias. Further study of both groups is being made.

Conclusion

COMPLETE fixation of the inguinal shutter and reinforcement of inadequate tissue layers will reduce the incidence of recurrent inguinal hernia.

The Myers' Technique was an important factor in achieving our results.

(1850 David Whitney Building.)

References

1. DORAN, F. S. A., and LONSDALE, W. N.: Simple Experimental Method of Evaluation for Bassini and Allied Types of Herniorrhaphy. *Brit. J. Surg.*, 36:339, 1949.
2. FALLIS, L. S.: Direct Inguinal Hernia. *Surg., Gynec. & Obst.*, 63:665, 1936.
3. KEITH, SIR A.: On the Origin and Nature of Hernia. *Brit. J. Surg.*, 2:455, 1923.
4. KRIEG, E. G. M.: Anatomy and Physiology of the Inguinal Region in the Presence of Hernia. *Ann. Surg.*, 137:41 (January) 1953.
5. MCLAUGHLIN, E. F.: Use of the Transversus Abdominis in the Repair of Indirect Inguinal Hernia. *Am. J. Surg.*, 72:232, 1946.
6. MCVAY, C. B., and ANSON, B. J.: Inguinal and Femoral Hernioplasty. *Surg., Gynec. & Obst.*, 88:478, 1949.
7. MYERS, G. R.: Personal communication.

Observations

AS PATIENTS pass before us in our daily practice and we observe the pageant of illness more closely, we become aware that the clinical practice of medicine has changed in the past 25 years. Not so many of these diseases are related to the action of alien, or pathogenic agencies, on an otherwise normal organism. Illnesses now seem to arise from within the very nature of the organism itself and seem to represent some struggle in self-expression or some anomaly of our given biological substratum. The question to consider is not so much the truth of the observation, but why is it so difficult for us to accept it as a discovery? Possibly because we are comfortable in our tradition. A tradition is like a cloister, protective and comfortable. We inherit this tradition from such men as Virchow who taught that there are no general diseases, only diseases of organs themselves; or Pasteur, who had us believe that each disease has a specific cause. It is an historical paradox that the great accomplishments of the past often become an obstacle to further development. There is always an inertia between the discovery of a new scientific truth and its acceptance into scientific work. As human scientists, we categorize our observations according to the scientific philosophy to which we were exposed in our training. We need constantly to revise this trend. Our observations are our greatest teachers.

—From "The Necessity of Illness," by HARRISON SADLER, M.D., in *J. Michigan State Med. S.*, June, 1954.

Hypertension in Industry

INQUIRY INTO THE INFLUENCE OF FAMILIAL FACTORS

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THE PRESENT study was prompted by certain observations made by one of the authors (C.A.D.) over a 13-year period on three chemists in the employ of E. I. du Pont de Nemours & Company, which suggested that "family history" may have been related in some way to the observations on blood pressure made on these three individuals on the annual physical examinations. The systolic and diastolic blood pressure findings on these examinations are shown in Fig. 1. The "family histories" in 1940 at the time the chemists were employed, and in 1953, are shown in Table I.

Case A, with an initial blood pressure reading of 184/100 had normal readings in 1953. This pattern followed that of the father who had been turned down for insurance because of elevated blood pressure but whose reading in 1953 was normal. The mother had low blood pressure in 1940.

Case B, with an initial blood pressure of 150/80, remained essentially unchanged throughout the 13-year span. Neither father nor mother gave a history of hypertension.

Case C had a relatively low blood pressure in 1940, 138/82, but by 1953 had developed malignant hypertension with readings varying between 250/200 and 112/110. The family history in this case is in marked contrast to that of the other two cases. Not only the father and mother had a history of high blood pressure, but so did a sister and one of the children of the employee.

As a result of these observations, it was decided to explore further the question of a possible pattern of development of hypertension related to family history and other variables. It was recognized that there are logical difficulties in attempting such a study by tracing the histories of current employees prior to the point of inquiry because of the possibility that during that time some employees may have left the company for rea-

TABLE I.

	1940	1953
CASE A:		
Father:	Age 51; alive and well. (Turned down for insurance after examination in his teens because of slight elevation of blood pressure; now normal.)	Age 64; alive and well.
Mother:	Age 49; alive and well, except for low blood pressure.	Age 62; alive and well.
Brother:	(one) Age 20; alive and well.	Age 33; alive and well.
Children:	One child; alive and well.	Four children; alive and well.
CASE B:		
Father:	Age 69; alive and well.	Died in 1953, age 82, of "carcinoma of prostate"; no history of hypertension.
Mother:	Age 77; alive and well.	Age 90; in good physical condition for her age. (Poor vision; arthritis.)
Sister:	Age 34; alive and well.	Age 47; alive and well.
Children:	No children.	No children.
CASE C:		
Father:	Died in 1939, age 65. History of high blood pressure and "strokes." Cause of death was lymphosarcoma.	Deceased since 1939.
Mother:	Age 71; alive, high blood pressure; several "strokes."	Died in 1948, age 79, of high blood pressure and "stroke."
Sister:	Age 32; alive and well.	Age 45; has high blood pressure.
Children:	Three children; alive and well.	Three children alive; two are well; one has high blood pressure.

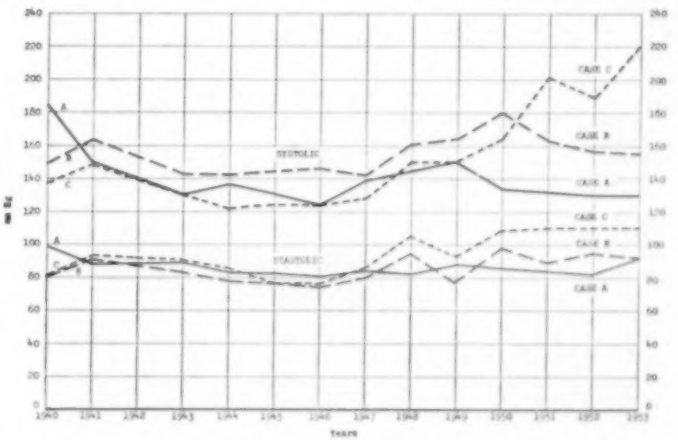

Fig. 1.
Blood pressures on three chemists, taken in 1940, and followed annually through 1953.

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sons associated with hypertension. In addition, it is unlikely that all the variables related to this particular problem would have been recorded in the detail required in a routine annual physical examination. On the other hand, it did not seem desirable to embark upon a lengthy "forward-going" study of *all* individuals* employed during a given period without some prior knowledge of the kinds of observations which might be pertinent. Such prior knowledge might be obtained with relatively little labor and expense by inquiry among current employees. The findings could then serve as a guide to the organization of a "forward-going" study. It is the purpose of this paper to present the results of this preliminary inquiry.

Study Design

IT WAS decided to interview a random sample** of employees over age 40 since hypertension is more prevalent beyond that age. The questionnaire used at the interview sought information concerning family history, dietary history, and certain personal characteristics. These data, together with certain findings on previous annual physical examinations, were correlated with the presence or absence of hypertension in the employee at the time of his annual physical examination in 1953. A total of 799 employees was interviewed. All the interviews were conducted by two physicians and at the time of the interview, the physician did not know whether the employee had been found to have hypertension on the physical examination.

For the purposes of this inquiry, an individual was considered to have hypertension if, on at least two successive annual physical examinations, the diastolic reading was 90 mm. of Hg. or greater.

Findings

(A) FAMILY HISTORY: The data with respect to family history are presented in Tables II and III. It is seen that when the mother alone had cardiovascular disease, 30% of the employees had hypertension; whereas, when *both parents* had the disease, or *just the father* alone had it, only *23%* of the employees had hypertension. Among employees, neither of whose parents had cardiovascular disease, only 19% were classed as hypertensive.

These findings are consistent with other reports in the literature which indicate that there is a greater chance of the children having hypertension when one or both of the parents have hypertension, than when neither parent has it. It is also interesting that this chance seems to be slightly greater when the mother has hypertension than when the father has it. Thus, Ciocco[1] states that "almost 29% of the fathers and 31% of the mothers of the men who died from cardiovascular diseases have died from these causes as compared to 23 and 26% respectively of the fathers and mothers of men who died from other causes." Søbye[2] in his study, found that "the chance of affection (i.e., having hypertension) was, mothers 45.64%, fathers 43.66%, sisters 68.49%, brothers 55.06%, parent's sisters 26.84%, parent's brothers 20.59%. It will be noted that the rate for females is higher in each pair." An attempt was also made to obtain information about the grandparents, and about the siblings of the employee. Only the data on the latter could be analyzed because the cause of death was unknown for most of the grandparents. With respect to the siblings, the findings are summarized in Table III. Here it is seen that the prevalence of cardiovascular diseases in siblings increased as one goes from families in which neither parent had cardiovascular disease, to those in which both parents had it.

*Or a representative sample of them.

**After analyses of the first 50 questionnaires, it was decided that a total of about 800 interviews would be needed. These 800 were obtained by taking every 20th card from the alphabetical file of employees. If the 20th card was an employee 40 years of age or less, the nearest card to it for an employee over 40 was used. This procedure resulted in practically every employee over age 40 in the Wilmington office being included in the study.

TABLE II.
PERCENTAGE OF EMPLOYEES WITH HYPERTENSION ACCORDING TO CARDIOVASCULAR DISEASE STATUS OF PARENTS

Cardiovascular Disease Status* of Parents	Employees H+	Employees H−	Total	% Employees
Both with CV Disease	26	88	114	22.81
Father with CV Disease	47	157	204	23.04
Mother with CV Disease	48	112	160	30.00
Neither with CV Disease	60	261	321	18.69
Total	181	618	799	22.65

*With cardiovascular diseases means either died of CV Disease, or living and having the disease.
H+ Hypertension present. H− Hypertension absent.

TABLE III.
PREVALENCE OF CARDIOVASCULAR DISEASE AMONG CHILDREN BY NUMBER OF CHILDREN

	Neither Parent With Cardiovascular Disease			One Parent With Cardiovascular Disease			Both Parents With Cardiovascular Disease		
	No. of Children			No. of Children			No. of Children		
No. of Children in Family	With CV Disease	Total	Rate/1000	With CV Disease	Total	Rate/1000	With CV Disease	Total	Rate/1000
1	7	53	132.08	18	56	321.43	5	16	312.50
2	17	138	123.19	34	170	200.0	13	52	250.0
3	22	174	126.44	25	171	146.20	13	75	173.3
4-6	50	551	90.74	69	606	113.86	15	150	100.0
7-14	11	203	54.19	36	364	98.90	11	88	125.0
Total	107	1119	95.62	182	1367	133.14	57	381	149.61

TABLE IV.
PERCENT OF PERSONS WITH OR WITHOUT HYPERTENSION IN RELATION TO HISTORY OF DIETARY HABITS

Hypertension	% of Persons with Indicated Dietary History			
	Decreased CHO Consumption	Decreased Protein Intake	Decreased Fat Consumption	Decreased Salt Consumption
Present (181 persons)	38.67	19.89	34.25	10.68
Absent (618 persons)	34.79	18.93	26.86	9.71

TABLE V.
PERCENT OF PERSONS WITH OR WITHOUT HYPERTENSION IN RELATION TO AGE AND DIETARY HISTORY IN THE TEN YEARS PRIOR TO INTERVIEW

Dietary History of Decrease	% of Persons with Indicated Dietary History					
	40—54		55 and over		All Ages	
	H+	H−	H+	H−	H+	H−
CHO Decrease	15.08	13.49	16.36	8.08	15.47	12.62
Protein Decrease	11.90	12.72	14.55	14.14	12.71	12.94
Fat Decrease	12.70	9.06	16.36	12.12	13.81	9.55
Salt Decrease	11.90	4.05	10.91	8.08	11.60	4.69

H+ Hypertension present. H− Hypertension absent.

Another point to be noted in Table III is that the proportion of siblings with cardiovascular disease decreases with increasing family size. This finding is consistent with some unpublished analyses of other material made by one of the authors (P.M.D.).

(B) *Dietary History:* The findings with respect to dietary history are shown in Table IV. When all ages are considered together, there appears to be very little difference in the history given by those in whom hypertension is present and those in whom it is absent, except with respect to fat consumption. About a third (34.25%) of the hypertensive employees gave a history of having decreased their fat consumption in the past, while the corresponding figure among those without hypertension is about a fourth (26.86%).

Obviously, the information in regard to history is not very meaningful unless the period of time to which the history refers is considered. This is done in Table V which gives the history for the 10 years prior to the interview and for two broad age groups.

None of the differences seen in Table V is of a magnitude greater than might easily be expected just by chance, except for salt consumption. Here the prevalence of hypertension is statistically greater in the age group 40-54 among those with a decreased salt intake during the 10 years prior to interview, than among those with no decrease. It is quite possible of course, that this association comes about because of a deliberate restriction of salt intake following the development of hypertension. The association is not apparent in the age group 55 or over. In the absence of a knowledge of the sequence of events, the full meaning of this association is not clear.

(C) *Personal Characteristics:* A number of questions with respect to personal characteristics of the employee were asked. These questions touched on such things as smoking and drinking habits, previous history of allergies, "strep. throat," renal diseases, disease problems in general, and emotional problems.

Fig. 2 compares the prevalence of hypertension among those possessing the particular characteristic and those without it. It is seen that the frequency of hypertension is about the same for both groups with respect to all characteristics studied except smoking. The percentage of employees with hypertension among non-smokers is statistically greater than among smokers. The significance of this last observation is not clear.

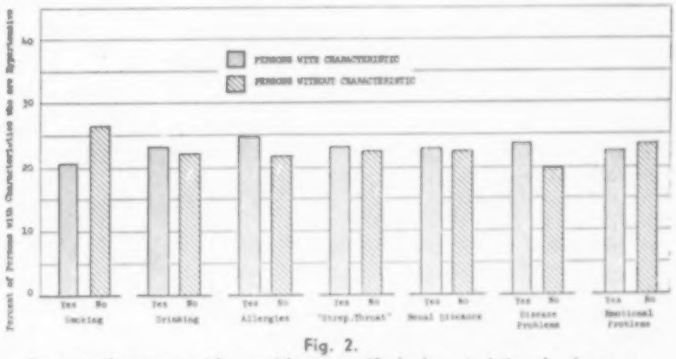


Fig. 2.
Percent of persons with or without specified characteristic who become hypertensive.

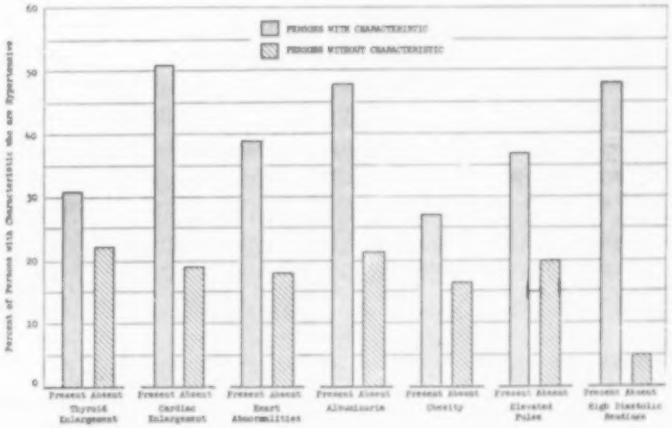


Fig. 3.
Percent of persons with or without specified characteristic who become hypertensive.

TABLE VI.
PERCENT OF PERSONS WITH OR WITHOUT A CHARACTERISTIC WHO ARE HYPERTENSIVE

Characteristic	H+	H−	Total	%H+
Enlarged Thyroid	9	20	29	31.03
Normal Thyroid	172	598	770	22.34
Fundus Abnormalities	29	25	54	53.70
Fundus Normal	97	373	470	20.64
Cardiac Enlargement	40	39	79	50.63
No Cardiac Enlargement	141	579	720	19.58
Albuminuria	20	22	42	47.62
No Albuminuria	161	596	757	21.27
Obese	129	346	475	27.16
Not Obese	52	272	324	16.05
Elevated Pulse Rate	55	95	150	36.67
Normal Pulse Rate	126	523	649	19.41
High Diastolic Readings	160	177	337	47.48
No High Diastolic "	21	441	462	4.55
Arcus Senilis	23	40	63	36.51
No Arcus Senilis	158	578	736	21.47
Heart Abnormalities	63	98	161	39.13
No Heart "	118	520	638	18.50

H+ Hypertension present. H− Hypertension absent.

It may be that many hypertensives have stopped smoking.

(D) *Findings on Previous Annual Physical Examinations:* The greatest differences in the prevalence of hypertension occur in relation to the findings on previous annual physical examinations. This is seen in Fig. 3 and Table VI. In this figure, the presence of a particular finding simply means presence at any time in the record of findings on a previous physical examination. The following definitions were used in analyzing these data:

Thyroid enlargement, cardiac enlargement, arcus senilis—recorded as such.

Heart abnormality—any mention of heart murmur, valve deficiency, mitral stenosis, or abnormal EKG.

Obesity—mentioned as such, or a weight increase of at least 10 pounds in 10 years.

Albuminuria—two successive readings of one plus or more.

Elevated pulse—two successive readings of 90 per minute or more.

High diastolic reading—any reading of 90 mm. of Hg. or more, other than those used to establish the presence of hypertension.

It is seen (Fig. 3) that the percentage of hypertensive employees among those having a particular finding in their annual physical examination is considerably greater than among nonhypertensives. (The only difference which is not statistically significant is that for thyroid enlargement.) The differences are particularly marked for cardiac enlargement, heart abnormality, albuminuria, and high diastolic readings. Shown in the table, but not in the graph, are the data for arcus senilis. The percentage of hypertensives among those with a finding of arcus senilis is 36.5%, as compared with 21.5% for those with no mention of this condition.

The results of a rough attempt to get at the time factors involved in the association of physical findings are shown in Tables VII-XV. An example will illustrate the meaning of the percentages in these tables. In Table VII it is seen that among employees who are hypertensive and in

TABLE VII.
PRESENT STATUS OF MALE EMPLOYEES WITH RESPECT TO PRESENCE OR ABSENCE OF HYPERTENSION IN RELATION TO PREVALENCE OF CARDIAC ENLARGEMENT* DURING PREVIOUS TIME PERIODS

Age Group	Hypertension	% Prevalence of Cardiac Enlargement 0-9 years ago	10-19 years ago	20-29 years ago
40-54	+	18.25	10.64	2.70
	−	4.24	2.79	0.81
55-65	+	30.91	16.67	4.00
	−	17.17	9.30	0.00
All ages	+	22.10	12.68	3.23
	−	6.31	3.96	0.62

*Cardiac enlargement is a definite finding under heart and chest x-ray.

TABLE VIII.
PRESENT STATUS OF MALE EMPLOYEES WITH RESPECT TO PRESENCE OR ABSENCE OF HYPERTENSION IN RELATION TO PREVALENCE OF THYROID ENLARGEMENT* DURING PREVIOUS TIME PERIODS

Age Group	Hypertension	% Prevalence of Thyroid Enlargement 0-9 years ago	10-19 years ago	20-29 years ago
40-54	+	6.35	6.38	5.41
	−	3.28	2.29	0.81
55-65	+	1.82	—	—
	−	3.03	—	—
All ages	+	5.00	4.23	3.23
	−	2.43	1.88	0.62

*Thyroid enlargement is a definite diagnosis under positive findings.

TABLE IX.
PRESENT STATUS OF MALE EMPLOYEES WITH RESPECT TO PRESENCE OR ABSENCE OF HYPERTENSION IN RELATION TO PREVALENCE OF OBESITY* DURING PREVIOUS TIME PERIOD

Age Group	Hypertension	Percentage Prevalence of Obesity 0-9 years ago	10-19 years ago	20-29 years ago	Percentage who were obese at any time
40-54	+	57.94	59.57	18.92	74.60
	−	42.20	37.06	4.88	56.45
55-65	+	47.27	45.83	12.00	63.64
	−	39.39	32.56	5.13	53.54
All ages	+	54.70	54.93	16.13	71.27
	−	41.75	36.25	4.94	55.99

*Obesity is a definite diagnosis under positive findings, or a weight increase of 10 pounds in 10 years.

TABLE X.
PRESENT STATUS OF MALE EMPLOYEES WITH RESPECT TO PRESENCE OR ABSENCE OF HYPERTENSION IN RELATION TO PREVALENCE OF ALBUMINURIA DURING PREVIOUS TIME PERIODS

Age Group	Hypertension	Percentage Prevalence of Albuminuria 0-9 years ago	10-19 years ago	20-29 years ago	Percentage with Albuminuria at any time
40-54	+	11.11	5.32	0.00	11.90
	−	3.47	1.52	0.00	3.85
55-65	+	9.09	4.17	0.00	9.09
	−	2.02	0.00	0.00	2.02
All ages	+	10.50	4.93	0.00	11.05
	−	2.91	1.25	0.00	3.56

*Albuminuria is two successive readings of one plus, or more, under urinalysis.

TABLE XI.
PRESENT STATUS OF MALE EMPLOYEES WITH RESPECT TO PRESENCE OR ABSENCE OF HYPERTENSION IN RELATION TO PREVALENCE OF ELEVATED PULSE RATE* DURING PREVIOUS TIME PERIODS

Age Group	Hypertension	Percentage Prevalence of Elevated Pulse Rate 0-9 years ago	10-19 years ago	20-29 years ago	Percentage who had elevated pulse rate at any time
40-54	+	15.08	29.79	21.62	32.54
	—	5.18	12.69	3.25	15.03
55-65	+	12.73	25.00	4.00	25.45
	—	7.07	12.79	10.26	17.17
All ages	+	14.36	28.17	14.51	30.39
	—	6.31	12.71	8.02	15.37

*An elevated pulse rate is two successive readings of 90 or more.

TABLE XII.
PRESENT STATUS OF MALE EMPLOYEES WITH RESPECT TO PRESENCE OR ABSENCE OF HYPERTENSION IN RELATION TO PREVALENCE OF HIGH DIASTOLIC READINGS* DURING PREVIOUS TIME PERIODS

Age Group	Hypertension	Percentage Prevalence of High Diastolic Readings 0-9 years ago	10-19 years ago	20-29 years ago	Percentage who have had high diastolic readings at any time
40-54	+	60.77	62.77	54.05	88.10
	—	18.69	10.41	17.09	26.01
55-65	+	81.82	52.08	40.00	89.09
	—	28.28	19.77	23.08	42.42
All ages	+	85.08	59.15	48.59	88.40
	—	20.23	12.08	19.14	28.64

*A high diastolic reading is a diastolic pressure of 90 or above when recorded on two or more successive examinations.

TABLE XIII.
PRESENT STATUS OF MALE EMPLOYEES WITH RESPECT TO PRESENCE OR ABSENCE OF HYPERTENSION IN RELATION TO PREVALENCE OF ARCUS SENILIS* DURING PREVIOUS TIME PERIODS

Age Group	Hypertension	% Prevalence of Arcus Senilis 0-9 years ago	10-19 years ago	20-29 years ago
40-54	+	9.52	—	—
	—	4.05	—	—
55-65	+	20.00	8.33	—
	—	17.17	3.49	—
All ages	+	12.71	3.52	—
	—	6.15	0.63	—

*Arcus senilis is a definite diagnosis under positive findings.

TABLE XIV.
PRESENT STATUS OF MALE EMPLOYEES WITH RESPECT TO PRESENCE OR ABSENCE OF HYPERTENSION IN RELATION TO PREVALENCE OF HEART ABNORMALITIES* DURING PREVIOUS TIME PERIODS

Age Group	Hypertension	% Prevalence of Heart Abnormalities 0-9 years ago	10-19 years ago	20-29 years ago
40-54	+	29.37	10.64	0.00
	—	14.45	5.08	0.00
55-65	+	40.00	8.33	0.00
	—	20.20	6.98	0.00
All ages	+	32.60	9.86	0.00
	—	15.37	5.42	0.00

*Heart abnormalities consist of heart murmurs and valvular defects as recorded under positive findings, or an abnormal EKG (electrocardiogram).

TABLE XV.
PRESENT STATUS OF MALE EMPLOYEES WITH RESPECT TO PRESENCE OR ABSENCE OF HYPERTENSION IN RELATION TO PREVALENCE OF FUNDUS ABNORMALITIES* DURING PREVIOUS TIME PERIODS

Age Group	Hypertension	% Prevalence of Abnormal Fundi 0-9 years ago	10-19 years ago	20-29 years ago
40-54	+	18.39	6.38	—
	—	2.43	—	—
55-65	+	33.33	11.43	—
	—	22.86	3.23	—
All ages	+	23.02	8.43	—
	—	6.02	0.57	—

*Fundus abnormality is a positive finding under fundus examination (of eyes).

the age group 40-54, 18.25% were found to have a cardiac enlargement in the 10 years preceding the last physical examination. The corresponding figures for non-hypertensives is 4.24%. These differences are found as far back as 20-29 years prior to the last physical examination, and occur also in the age group 55-65.

It is observed that the association between hypertension and various physical findings extends back in time for practically all the conditions examined.

Summary and Comment

INITIAL observations on three chemists in the employ of the Du Pont Company which suggested that family history might bear some relation to the occurrence of hypertension in an employee, are borne out by the findings of the present study. Employees over age 40 whose parents—particularly the mother—were known to have cardiovascular disease showed a greater prevalence of high blood pressure on annual physical examination than did employees neither of whose parents had cardiovascular disease. These findings suggest that a knowledge of family history may be of practical value in such matters as job placement in relation to present or future physical condition of employees. Such knowledge may also be useful in estimating potential loads on pension plans and fringe benefit programs.

The present inquiry was made of individuals currently in the employ of the Company. Since comparable information on individuals who had left the Company was not available, the study sought primarily to identify factors which gave some promise of yielding fruitful information if collected on a "forward-going" basis as individuals became employed. As a result of the findings on family history, the Company has added a section on this subject to the personal history record now in use at the time of the employment examination. In time, these data will become available for more definitive study of the relation of family history to the development of hypertension.

Other factors apparently related to the occurrence of hypertension in employees over 40, were the finding on physical examination of cardiac enlargement or other heart abnormality, albumin in the urine, elevated pulse rates, stray high

diastolic blood pressure readings, certain abnormal eye findings, and excess weight.

This observation, of course, is not unexpected on clinical grounds alone. It is of particular interest, however, that the association between high blood pressure and the various physical findings or laboratory studies seems to extend back in time for practically all of the conditions mentioned. This suggests that individuals who are most likely to develop hypertension might be discovered in the very early stages. However, it was not possible in the present study to determine whether the hypertension preceded or followed the other factors associated with it on the physical examination. Whether forerunners of hypertension can be identified will depend upon whether it is possible to determine the sequence of events leading to the development of hypertension. Industry would appear to have an excellent opportunity to contribute to an understanding of the natural history of hypertension and other conditions provided the records are organized to bring out this sequence.

The observations on dietary history and personal characteristics showed little association with the presence of hypertension in the employee. This may largely reflect the difficulty of obtaining quantitative information in this area in retrospect. The two exceptions to this lack of association were the history of salt intake and history of smoking.

Individuals who had decreased their salt intake for the 10-year period prior to the study showed a higher prevalence of hypertension than those in which no decrease was indicated. There was also a higher prevalence of hypertension among non-smokers than among smokers. As before, a knowledge of the sequence of events is needed before the meaning of these observations can be evaluated.

References

1. Ciocco, A.: Cardiovascular Diseases Mortality in a Sample of White Males and Their Parents. *Human Biology*, 13: 350-362, September, 1941.

2. Sorye, P.: Heredity in Essential Hypertension and Nephrosclerosis. A Genetic-Clinic Study. Dissertation: Copenhagen, 1948. *Biol. Abstr.*, 24:17316, July, 1950.

Functional Illness

THE MEDICAL profession, with all its progress, needs outside help on the problem of emotionally ill, displaced, abandoned, chronically unhappy, or otherwise handicapped persons. Physicians can suggest, they can advise, they can warn, but they cannot go with these persons into the community and lead them into new interests and new drives to demonstrate reasons for living. This is, and must be, the responsibility of society. There is too much wastage of human resources in the communities' own back yards. Practical and interesting demonstrations of how best to use increasing amounts of leisure time are needed. Not only would this help to reduce the amount of functional disease, it would also help to remove a potential threat to the private practice of medicine. Physicians should not cease to attack the life-threatening diseases, but they need to recognize how many persons there are who have not been helped by drugs or surgery and how greatly they suffer. Too many persons today tend to blame physicians for failure to cure emotionally ill persons. Physicians do attempt the care of these persons, but their efforts are inadequate. The medical profession should stimulate renewed inquiry into the causes of functional disorders. Physicians should not sit back and assume the blame for failing to cure persons with functional illness nor expect them all to seek the analyst's couch. Physicians should, instead, point out that the trouble may be with society, with man's conversion into a modern wanderer uprooted from his past, his old assurances and prejudices washed away and not replaced by new solidity. Persons come in increasing numbers to physicians' offices and, in many cases, turn away in despair. It seems a bit foolish for physicians to castigate themselves and allow others to castigate them for the emotional illness of a sick society. Physicians should assert the fundamental nature of the problem and, by doing so, aid in the elimination of this modern pestilence.

—From "Functional Illness—Medical Enigma," by Robert J. Needles, M.D., in *J.A.M.A.*, October 9, 1954.

Dennison Manufacturing Company's Employee Medical Services

DENNISON Manufacturing Company, Framingham, Massachusetts, in its 1953 Annual Report to stockholders, puts well deserved emphasis on the Company's Medical Department, of which, since 1918, Halstead G. Murray, M.D., has been Medical Director. Mr. John S. Keir, Company President, introduced the "Dennison Clinic" in his Letter to the Stockholders: "There can be no doubt that the good health of all its employees is the most priceless asset any organization has. The Company has long felt that it has a paramount duty to protect the health of every individual who is employed by the Company to the fullest extent that is appropriate. As early as 1916 a Clinic was established to help discharge this responsibility. Under the exceptionally capable guidance of Dr. Halstead G. Murray, our Clinic is now an integral part of our working lives. The story of the Clinic is told as part of this report."

The following description of the Dennison Clinic is quoted from the 1953 Annual Report:

The Dennison Clinic

NOT OVER a third of a century ago, industrial medical programs were visualized as little more than the establishment of first-aid stations with equipment which matched that concept. The Dennison Clinic in those early years followed the general pattern.

With the passage of time, industrial medical programs have evolved far beyond the original concepts. To be sure, first aid and the treatment of minor injuries and ailments still are parts of such programs. But there has been added a very important element of medical counseling which aims primarily at prevention so that the hazards to health may at least be mitigated. It must be remembered that for many years medical advice was sought only after home remedies did not achieve helpful results.

The Dennison Clinic in its evolution has followed and in some aspects has led in the changing responsibilities which are now generally accepted as those of an industrial Medical Department. It has been equipped with the professional skills and the basic tools which such skills require.

The Dennison medical staff, consisting of a full-time physician—who started his career with the Clinic in 1918—three registered nurses, and the part-time aid of an oculist and a roentgenologist, now handles some 30,000 Clinic visitors each year, at an average rate of 150 per day. A receptionist, who also doubles as secretary and clerk, maintains the record keeping involved in this volume of medical attention.

No charge is made to the employees for medical treatment or for medicines used in the course of treatment. A nominal charge is made for x-rays. The total cost to the Company averages less than $13 per employee per year.

During the war years, a monthly check on absenteeism made in all departments showed an absentee rate due to sickness as only 3% per year out of a total absenteeism of 4.5%. During those same years the national average of total absenteeism was running between 7 and 8%. Another interesting figure is that, of some 200 executive personnel, the time lost due to illness has not exceeded an average of two days per executive per year during the past 10 years.

Nor is the return on the investment in the Clinic program to be measured in dollars alone. There is no question that the Clinic program, as it has found an ever higher degree of acceptance by the whole organization, has made a genuine contribution to organization morale. Any objective or detailed study of the Company investment in its medical program reveals that in both tangibles and intangibles the program stands on its own feet as a real contributor to the profitable operation of the Company. It should not be overlooked that the existence of many health and accident laws today puts a special premium on the maintenance of a well-rounded medical program, if no other reason for such a program existed.

The specific activities of the Dennison Clinic break down into six major categories: pre-employment physical examinations, annual physical examinations, treatment of common ailments, treatment of accidents, clinical studies, preventive measures.

Pre-Employment Physical Examinations

SINCE 1921, each person employed has received a thorough physical examination. Its purpose is to avoid placing employees in work which would endanger their own safety as well as the health and safety of their fellow workers. The Clinic makes an average of 1300 such examinations a year. Most common physical defects are found to be defective teeth, hearing and eyes, in that order. All new employees are given the "Eye Screener" test. This machine checks for near and distant vision, depth perception and muscle balance. Any person having suspicious lung signs is given an x-ray. An x-ray specialist reads films for the final diagnosis.

At this point, you might conclude that the

thoroughness of pre-employment examination is the primary reason for an excellent health record. Naturally, if we employed only perfect physical specimens, the over-all average would get a boost. On the contrary, our health requirements for employment are liberal. Only one-half of one percent of all applicants are rejected for medical reasons. In fact, our experience shows that there is a place in industry for many so-called handicapped workers. We employ four blind persons, many persons with vision in only one eye, persons crippled by infantile paralysis, men and women with high blood pressure, major amputees, and others. The wisdom of this policy is borne out by studies made by the Clinic in 1953. We employ 129 persons with defective hearts. Their average length of employment is five and a half years. One has been on the job for 30 years. Sixty of our employees have high blood pressure (above 180). Not more than 10% of such cases have died while working here. None was declared compensable as being work-connected. Our experience with such handicapped workers indicates that 90% make good at their various jobs. This indicates that persons with damaged hearts, highly elevated blood pressure, or other disabilities can work year after year, if properly placed.

Annual Physical Examinations

FOR THE past 24 years, all Dennison executives from foremen to directors have been given annual health examinations. In 1953, there were 203 such examinations, including complete physical examination, chest x-ray, electrocardiogram, and other special tests. That this program pays off is indicated by a few figures. The average age of Dennison executives is 47 years. Yet, 94% of them are in good health. Less than 100 required health counselling in 1953 . . . . and 95% of those examined during the past 10 years have corrected all correctable defects. Their lost time due to illness averages only two days per man annually. Annual examination of non-executive personnel is optional. Yet more and more of our workers are wisely taking advantage of our Clinic's services.

Treatment of Common Ailments

COMMON ailments treated by the Clinic include colds, headaches, digestive troubles, dysmenorrhea, skin ailments, eye irritations, in that order. Average treatment time is 10 minutes. Common colds, of course, outnumber all the rest. Treatments average between three and four thousand annually, year in and year out. The Clinic has made great progress in lessening their frequency, severity and duration with vaccines, antibiotics and penicillin inhalations. Several years ago, a study of the Clinic showed that vaccine treatment for the prevention of colds will benefit to some degree about 75% of the persons taking the treatment. Antihistamine drug treatment in one clinical study proved 75% effective in curing colds in their early stages, or alleviating their symptoms. More recently our Clinic has adopted the use of aerosol penicillin inhalations to clear up chronic head colds. It has been found to be 80% effective.

Treatment of Accidents

THE FRAMINGHAM plant with its 2500 employees had a good accident record in 1953. There were no serious accidents and only 160 severe ones. Those accidents included sprains and strains, fractures, contusions and bruises, lacerations and cuts, in that order. Because of the Clinic's facilities, skill and efficiency, only 31 of the 160 severe accidents kept employees away from their work.

Preventive Measures

THE CLINIC'S interest in industrial health extends beyond its curative phases. Elimination of health and safety hazards is a vital part of the work. All departments of the Company cooperate. As a result, the Company has never had a single case of industrial disease caused by processes used in the manufacture of its products. Periodic inspections of the plant by Clinic personnel, as well as fire engineers, executives and employees, achieve the "'good housekeeping" that keeps accidents at a minimum. Education at time of employment and bulletin-board reminders not only establish good health and safety habits, but also encourage workers to waste no time in utilizing the Clinic's facilities as soon as symptoms of illness develop or even the most trivial injuries occur.

Industry properly spends millions of dollars in maintaining the conditions of buildings, machinery and tools. Within proper limits, whatever an industrial organization can do to maintain the physical well-being of the people who constitute the organization, certainly is of no less importance. A well-conducted medical program has been proved to be the sort of investment that pays off consistently.

Meaning and Purpose

A MAN wants to feel whole with the world of people and things about him. He wants his job geared into and to be a significant part of the whole process. His work must have meaning and purpose in terms of the over-all activity with which he is associated. Employees who never see the end product, who do not know why they are doing what they are doing, or who believe that their particular activities have no real value are destined to experience a sense of frustration concerning this need of integration.

—DONALD C. JONES, in *Office Executive*, July, 1954.

Lederle's Medical Department

THE MEDICAL Department of the American Cyanamid Company's Lederle Laboratories Division, at Pearl River, New York, moved to its enlarged quarters in February, 1954, and now occupies 7500 square feet of the new administration building. Its facilities consist of two four-bed wards; an operating room for emergencies; a kitchenette for preparing meals for employees detained in wards; three preparation rooms for preliminary examinations; four doctors' offices; an x-ray department with x-ray room, darkroom, and film reading room; a large treatment room; a physiotherapy and hydrotherapy room; a soundproof room for basal metabolism and electrocardiography; a central supply and storage room; an attractive reception area; washrooms; a dispensary-pharmacy, and a ramped entrance for the Company's own ambulance. In the treatment of occupational injuries, free use is made of outside consultants in various fields.

THE emphasis at Lederle, however, as in all of Cyanamid, is on prevention rather than treatment. To this end a careful medical history is taken on all new employees, and each is given a complete physical examination. The pre-employment medical examination includes chest x-ray, TB patch test, urine analysis, complete blood count, Wassermann test, audiometer test, and visual acuity survey. Any defects discovered in the course of this, or in the annual physical examination which each employee receives, are referred to the family physician for treatment.

In addition to other usual medical services, Lederle employees receive tetanus toxoid injections routinely. After the initial injections over the first two years, booster shots are given at the end of five years. This has been the practice at Lederle since 1938. The toxoid injections have saved considerable expense by eliminating the necessity in certain traumatic cases for the administration of tetanus antitoxin and the possible loss of man-hours from serum reaction.

The Company's world-wide research activities require the Medical Department to supply special immunization to employees whose work will take them into areas of the world where certain diseases are found. For example, a scientist who is traveling to a tropical or sub-tropical area on a research project might be given injections to prevent such diseases as cholera, typhoid, encephalitis, or typhus.

As a service to employees, at the request of their family physicians, the Department makes

The Department has its own ambulance. A ramped exit near the first aid room facilitates delivery of patients to the examining rooms and wards.

Nearly 20,000 Lederle employees and job seekers passed through this modern reception area to visit the Medical Department during its first five months in the new quarters.

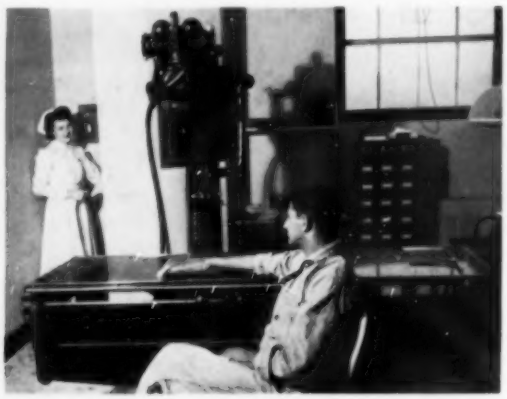
Dr. Maxmillian Moses, head of the Department, and Dr. J. H. Harney, one of his two associates, confer daily on problems of the Department. Miss Stockford, secretary to Dr. Moses, takes notes.

available its facilities for such tests as blood group typing, urine analysis, basal metabolic rate tests, and electrocardiograms.

AMERICAN Cyanamid employees' medical program is directed by D. O. Hamblin, M.D. The Department at Lederle is supervised by Maximillian J. Moses, M.D., assisted by J. N. Harney, M.D., and R. Eskesen, M.D. Another important staff member is Mr. John Wright, industrial hygienist, who is responsible for the elimination of health hazards within the plant. As Lederle continually develops new products and improves manufacturing processes for old ones, Mr. Wright works with industrial engineers and hygienists of the central Medical Department to see that processes are completely safe for operating personnel. The remainder of the full-time staff includes 12 nurses, two technicians, a receptionist, and two clerk-typists.

The ward entrances are in the left foreground, adjacent to the x-ray department.

Two technicians are on duty every working day in the new laboratory. Their work includes urinalysis, complete blood counts, stool examinations, sedimentation rates, basal metabolisms, electrocardiographs, blood chemistry, bleedings, and similar services.



The x-ray department occupies three rooms. Follow-up x-ray examinations are provided all employees if required, and abnormalities discovered are reported to the employee's physician. Routine chest films are taken on all pre-employment and annual examinations.

The Department has two four-bed wards. Employees who are detained in the wards briefly have all the advantages of a small hospital—including food service, from a kitchenette supervised by the nurses.

The physiotherapy, hydrotherapy room. The Department is equipped with whirlpool baths, diathermies, infrared lamps, medcolator, hydrocolator, ultraviolet lamps, moist air chamber.

Occupational Health Institute

ORIGIN—DEVELOPMENT—PURPOSES

ABOUT 10 years ago, the Officers and Directors of the Industrial Medical Association realized that the Association could help to further the progress of industrial medicine by giving some definite attention to certain opportunities which were then apparent. Leadership seemed needed in the matters of improving the teaching of industrial medicine and occupational health in medical schools and in schools of public health, and in conducting studies and surveys of facilities and educational programs in medical fields as applied to industry. Along with these, there was the need for the sponsorship of medical residencies and postgraduate training in industrial medicine.

Accordingly, the Industrial Medical Association established an agency through which these purposes could be expressed. This agency was a tax-exempt professional educational trust, formed in 1945, and called the American Foundation of Occupational Health.

Approval of Medical Services

BY 1951, the Foundation had made considerable progress within the scope of its original purposes.

In that year the American College of Surgeons—which in 1932 had established a standard for the evaluation and certification of medical services in industry, and since that year had been making surveys and issuing the ACS Certificate of Approval to medical services that complied with the standard—decided to relinquish that activity. It was appreciated that the ACS minimum standard, having been based principally on surgical adequacy, needed revision and amplification to embrace the expansion of industrial medicine into the preventive as well as the curative. Health maintenance for all had become recognized as considerably more important than health restoration for the few. The College, therefore, suspended its formal evaluation and certification of medical services, and the Industrial Medical Association, as the official medical group in occupational health activities, agreed to carry it on. An arrangement was made whereby this activity was transferred from the American College of Surgeons to the Industrial Medical Association, and since May 1, 1951, the evaluation and certification of medical services in industry has been a function of the Industrial Medical Association.

The standards on which the ACS Certificates of Approval were awarded constituted mainly a recognition of surgical competence. The Industrial Medical Association broadened the standards to comprehend the active instancy of medical and surgical completeness. According to the new IMA standards, to be entitled to approval a company must: "(1) have a stated medical policy; (2) perform preplacement medical examinations; (3) perform periodic physical examinations on all employees exposed to industrial hazards; (4) have available facilities for voluntary periodic physical examinations for all employees whenever considered practical; (5) maintain a competent consulting staff; (6) give attention to sanitation, safety precautions, and industrial hygiene; (7) have the chief medical officer or adviser report to some responsible member of management 'who is conscious of and familiar with managerial interpretation of medical policy'; (8) maintain a well-equipped dispensary for emergency care as well as for preplacement and periodic examinations; and (9) have medical and nursing personnel who are graduates of accepted schools of learning and are in good standing and properly licensed to practice."

During the next three years, i.e., until mid-1954, the American Foundation of Occupational Health evaluated and awarded the IMA Certificate of Approval to more than 200 industrial medical services. One hundred and fifty-two of these were listed in *Industrial Medicine and Surgery* for October, 1953, and in that same issue there was a reproduction of the Certificate of Approval, in its four colors.

Needs in Other Areas

MEANWHILE, principally in management circles outside of the area in which medical services had become actually the expression of a management function, there developed an increasing demand for information and technical guidance—particularly from middle-sized and smaller plants, sometimes with as few as 100 or less employees. "Often there was confusion as to how best to provide the right quality and quantity of medical services for the employees." The need for a clearing house for the exchange of information and experience among managements and medical staffs, and the need for a place to turn for help in dealing with health problems peculiar to specific industries or localities became almost urgent. The scope of the work undertaken up to that time by the Foundation was limited to existing health and medical services. An agency that could continue to do that work and, at the same time, fulfill the demand for guidance in the area where there had been no medical services but there was a desire to inaugurate them, was indicated. The

Trustees and Directors, therefore, decided to use as such agency the American Foundation of Occupational Health, but to change its name, expand its Board of Trustees to include representatives of both medicine and management, and enlarge its purposes.

Accordingly, the trust agreement, which in 1945 had established the American Foundation of Occupational Health, was amended. The purposes and areas of service of the trust were increased in number and broadened in scope, and the name was changed to the present one, "Occupational Health Institute."

Occupational Health Institute

NOW OCCUPATIONAL HEALTH INSTITUTE, sponsored jointly by management and medicine, has headquarters at 6 East 39th Street, New York 16, where it is:

1. Serving as the official acrediting agency for industrial health services; making surveys of health services; reporting on the status and efficiency of existing programs; counseling on how best to improve conditions; and awarding the OHI Certificate of Health Maintenance to those conforming to the standards set by the Industrial Medical Association.

2. Providing a clearing house for exchange of information and experience among managements and medical staffs throughout the United States, the Hawaiian Islands, and Canada.

3. Giving companies a place to turn to for help in dealing with health problems peculiar to specific industries or localities.

Occupational Health Institute provides its services without charge. It is financed through: (1) membership fees from employing firms; (2) contributions, and special-purpose grants, including scholarship and research allocations. It is able to carry out an extensive program on a limited budget because its Officers and Trustees serve without compensation, as do the many experienced industrial physicians who act as counselors. They conduct surveys of industrial medical services, consult with management and medical staffs, and apply their experience to help other organizations meet occupational health problems.

The "Certificate of Health Maintenance"

REGARDING the new certificate awarded by Occupational Health Institute, the change of designation from "Certificate of Approval" to "Certificate of Health Maintenance" reflects the wider concept of the Institute's interests. Already this had been expressed in the 200 or more Certificates of Approval awarded, as above mentioned, subsequent to May 1, 1951. Incidentally, all of these 200 certificates issued by the Foundation will be replaced as quickly as possible, each one by its new OHI "Certificate of Health Maintenance."

Now functioning, Occupational Health Institute is as much concerned in helping a company inaugurate a medical service for its employees as it is in surveying, appraising, and accrediting an employee medical service already established. The education and cooperation of management toward a much wider acceptance and use of industrial medical facilities on whatever scale are among its principal aims. Long it has been deplored that the small company—with perhaps no more than 50 employees—is too often without employee medical facilities. This may have been the result of lack of information, economic considerations, or simple inertia. Whatever the reasons, Occupational Health Institute proposes to do something about it—to do all that can be done in the way of suggestion, advice, information, consultation, technical guidance. It is prepared in all respects of its purposes to undertake surveys and appraisals of employee medical programs throughout the United States and Canada, to offer consultation and technical help on occupational health and related problems, to educate management on the values and advantages of medical service, and to make suggestions and recommendations for bringing programs up to the IMA standards which have been established for plants with from 50 to 25,000 and more employees. Concurrently, and as funds become available, the Institute will sponsor more scholarships and fellowships in industrial medicine, hygiene, and nursing.

Recapitulation

IN 1945, the Industrial Medical Association established—as a tax-exempt trust for professional educational purposes—the American Foundation of Occupational Health.

In May, 1951, the Industrial Medical Association took over from the American College of Surgeons the evaluation and certification of medical services in industry according to ACS standards.

In 1951, the Industrial Medical Association, having revised and enlarged these standards to embrace health maintenance as well as health restoration, began the evaluation and certification of medical services in industry according to its new and broader concept.

In 1954, the Industrial Medical Association, in order to realize its potentials for consultation and technical guidance in the development of industrial medical services in new places, and to form a general clearing house for information and counsel in the whole field of occupational health, changed the name of its trust to "Occupational Health Institute," elaborated its powers, and expanded its purposes.

In 1954, Occupational Health Institute established its headquarters at 6 East 39th Street, New York 16, (Murray Hill 3-8447), where as an agency of the Industrial Medical Association and a functional liaison between medicine and management, it conducts its operations under direction of its Officers and Trustees.

The Officers are:

Chairman—ROBERT COLLIER PAGE, M.D.
Vice-Chairman—STEPHEN G. HALOS.
Secretary—CATHERINE R. DEMPSEY, R.N.
Treasurer—DAVID W. BLACK.

Eleventh International

CONGRESS ON INDUSTRIAL MEDICINE

NAPLES, ITALY—SEPTEMBER 13-19, 1954

IN THE YEAR 1485 A.D., or thereabouts, in the Hall of the Barons of the Castel Nuovo (better known as the Maschio Angioino) in Naples, Italy's feudal lords were assembled in protestation of the encroachment and demands of a new government. At a signal from that government, soldiers rushed in and hauled the indignant barons to the courtyard below, and to the last man every head was cut off. The delegates to the Eleventh International Congress, meeting in that same hall, fared better. Not a head was lost, but there was damage. Many completely lost their hearts to the charm and hospitality of the Italian hosts.

The affairs of this Congress fall naturally into three compartments—the plenary sessions of the Commission (otherwise termed the Permanent Committee), the scientific program, and the social events.

The Plenary Sessions

THE COMMISSION, whose recent past president was PROF. PIERRE MAZEL of France, roughly corresponds to the House of Delegates of the American Medical Association. It consists of 162 titular members representing 32 different countries the world over, but by no means were all of the official Delegates in attendance. At the outset, the official United States delegation was represented by only three members—ROBERT T. LEGGE, CARL M. PETERSON, and CAREY P. McCORD. Delegates who could not attend included GEORGE H. GEHRMANN, LEONARD GREENBURG, HENRY H. KESSLER, ANTHONY J. LANZA, WILLIAM A. SAWYER, ROYD R. SAYERS, CLARENCE D. SELBY, and JAMES G. TOWNSEND. During the course of the Congress, two vacancies in the delegation arose—one from the resignation of DR. SELBY, and the other from the elevation of DR. LEGGE to honorary member-

Maschio Angioino, the meeting headquarters of the Eleventh International Congress.

The front of the Royal Palace, the locus of the Grand Ball tendered by the City of Naples.

ship in the Congress. Thus, DR. LEGGE joins ALICE HAMILTON and LUDWIG TELEKY as an American recipient of this accolade. The vacancies in the delegation were filled by the election of DR. MAX BURNELL, Medical Director of General Motors Corporation, and DR. HENRY BRIEGER, Professor of Industrial Medicine, Jefferson Medical College of Philadelphia. DR. BRIEGER, being in attendance, became the fourth titular member present. DR. ROYD SAYERS, long a Vice-President of the organization, tendered his resignation but remains as one of the titular members representing the United States. In filling this vacancy, the United States delegation urged that another part of America—Canada—be recognized and therefore nominated as one of the Vice-Presidents, DR. RUSSEL B. ROBSON, Medical Director of the General Motors Corporation's plant in Walkerville, Ontario.

Some current thinking is that in recent years language difficulties scarcely arise among spokesmen of varied industrial nations. It has been pointed out that through reliance upon the interpreters and polylingual earphones language handicaps are removed. Not so. In the plenary sessions of the Congress as many as six languages were utilized in discussions, all to the perplexity of many with limited linguistic capacities. On this account exactly what may have transpired on an official basis has some elements of confusion. Prolonged discussions centered about the status of industrial nurses in their development of an international body of their own. Just what eventuated forms a basis of an editorial in this issue (p. 518). Other major items of discussion are briefed in the editorial just cited.

Toward the end of the sessions, DR. LUIGI CAROZZI tendered his forthwith resignation as Secretary Generale after having held that position since the founding of the Commission in June, 1906. His unflagging services to the Congress have been marked by devotion and personal sacrifices. This unanticipated resignation led to the spontaneous demand, after making DR. CAROZZI an honorary member, that he remain in office for the time being and certainly throughout the period necessary to bring to finality the records of the Eleventh Congress.

Elected to the presidency of the Congress, a high honor for any physician in any land, was DR. SVEN FORSSMAN, Medical Consultant to the Swedish Employers' Confederation, of Stockholm, Sweden. The country honored as the site of the Twelfth Congress in 1957 is Finland, with Helsinki as the city. The prospect is that many of the responsibilities as host will fall upon DR. LEO NORO, Director of the Occupational Medical Foundation, Institute of Occupational Health, Helsinki, Finland.

The Vice-Presidents elected were DR. RUSSEL B. ROBSON, of Canada; DR. FRANZ KOELSCH, of Germany; PROF. SCIPIONE CACCURI, of Italy; PROF. A. DE LA FUENTE, of Spain; and PROF. J. MELISSIONOS, of Greece.

The Scientific Program

ON REGISTRATION, everyone in attendance was furnished with a sizable leather portfolio containing a veritable preview of all that was to happen, including formal card invitations to many social events. More important were book publications of nearly all the scientific papers published in the language of the author. In addition there was much local information dear to the hearts of the unfamiliar tourist. Above all, as a perfect symbol of hospitality, some but not all of the portfolios contained dainty coral earrings. Apparently not enough earrings were on hand to go around so perhaps a third lacked them. Hell hath no fury like that of the wife of an American or British delegate whose portfolio did not contain the earrings. Stampeding protesters sweetly were told that "Tomorrow there will be more earrings," but there never were.

The printed books of papers were carefully planned to eliminate the necessity for full formal scientific presentations, but the planners did not reckon with the ambitions of scientific authors, investigators and orators. The demand was for full-time presentation of endless 40 minute papers down to the last parenthesis. The program planners thought nothing of arranging for 20 papers on a single two and a half hour session with usually five or six additional papers thrust upon the chairmen at the last moment, and any idea of starting a meeting on schedule was absurd. Some

The American delegation at the first plenary session. Flanked by their peers from other countries are Carey P. McCord, Robert T. Legge, and Carl M. Peterson.

speakers, sitting breathlessly with a manuscript in hand, were never reached on the program—but no matter, already they had been published. So, just why any oral presentation beyond the barest abstracts was necessary never became apparent. On the various programs as many as five languages may have been employed but only in the main auditorium were polylingual phones supplied. Thus only a few were able to follow the full program.

Outstanding contributions to the scientific program were made by representatives of the United States including: DR. F. PRINCI, "Toxicity of the Chlorinated Hydrocarbon Insecticides"; DR. H. E. TEBROCK, "Etiology of Chronic Berylliosis"; DR. F. RONCHESE, "Stimmate del Lavoro Incerte e False"; DR. R. PAGE, "The Health of the Petroleum Worker"; DR. E. S. JONES, "The Employee's Responsibility for Personal Health"; DR. H. BRIEGER, "Industrial Antimony Poisoning"; DR. H. HARDY, "Clinical Experience with Calcium EDTA (Monocalcium Disodium Ethylene Diamine Tetra-Acetate) in the Treatment of Chronic Lead Poisoning"; MRS. M. S. HARGREAVES, R.N., "The Practical Application of Human Relations in Industrial Health Programs"; DR. F. RIEDERS, "Effect of Ethylene Diamine Tetra-Acetate (EDTA) on the Distribution and Excretion of Metals"; and DR. REX H. WILSON, "Toxico'ogy of Plastics."

In the over-all estimate of the scientific presentations it must be said that the programs were far better than appraised by the average hearer. The endless shifting from Italian to English, to German, to Spanish, to Portuguese, to Swiss, to French provoked a state of blocked minds to the point that little was rightly acclaimed. It is good that the book publications were available.

The Social Events

FOLLOWING the precedent of the Tenth Congress in Lisbon, social activities were outstanding in Naples. An astonishing lot of major events were planned by Dr. Caccuri and his associates, and consummated. Some of these events demand and warrant precise mention. Climaxing all was the Grand Ball in the ancient palace of the kings of Italy, Palazzo Reale, with the Mayor of Naples as the host. Almost to the last, attendants of the Congress, some with wives and children and all adorned with the ultimate in finery, converged upon the spacious palace where for this one occasion there was room for every activity from dancing to feasting and to outdoor prominading on the terraces overlooking the bay and Vesuvius.

Among those attending from the United States were: DR. and MRS. ROBERT T. LEGGE, DR. and MRS. CAREY P. McCORD, DR. and MRS. H. BRIEGER, DR. and MRS. E. S. JONES, DR. and MRS. E. L. BELKNAP, DR. CARL PETERSON, DR. H. E. TEBROCK, DR. FRANK PRINCI, MRS. M. S. HARGREAVES, R.N., DR. REX H. WILSON and family, DR. and MRS. ROBERT C. PAGE, DR. F. RONCHESE; DR. HARRIET HARDY, and DR. F. RIEDERS.

The lament was heard among the Americans that it was unfortunate that George III, King of England during a portion of the American colonial days, was not so impressed with his colonial possessions as to have built a magnificant palace, let's say in Philadelphia, later to have been taken over by an independent United States and persisting to this day providing opportunity for regal entertaining in the European manner. Nothing in the Americas is equivalent to the pub-

Dr. Pierre Mazel presiding over the Eleventh International Congress.

Dr. Luigi Carozzi (standing), Secretary Generale of the Congress from its creation in 1906.

The Congress was not wholly scientific.

lic and private palaces throughout Europe, and notably in Italy and France. The truth is that some of these spacious palaces are enormous burdens to taxpayers. Some have been turned into museums, art galleries, hospitals and prisons. Some remain hollow monuments to bygone glories such as is true of the gigantic palace and grounds at Caserta.

Another bit of magnificance was staged at the Mostra d'Oltremare, a highly modern series of structures said to constitute Mussolini's major architectural concession to Naples. Considerate and planful as were the Italian hosts, often they left undone many details that would have added to the pleasure of perplexed and confused outsiders. On this occasion, the Congress visitors by the many hundreds, and briskly on time for once, were transported to these exposition grounds. In truth, many visitors did not know where they were going when they departed, did not know where they were on arrival, did not know what to do upon entering the grounds nor what was to happen as the eventuality, nor how to get home after it was all over. There were in evidence no greeters, no hosts. But, in proper due course one grand hall blossomed out in a blaze of additional lighting and all in attendance gravitated to this hall. There they were greeted by a buffet banquet in the grand Italian manner.

Other tours provided, and always in astonishing abundance, were to the Royal Palace at Caserta, to Pompeii and Herculaneum, to Salerno, to Capri, to the National Museum in Naples, to the Museum of San Martino in Naples, to the modern factories of Naples, along the Amalfi Drive with the ever anticipated lunch, this one being in the city of Amalfi.

The social program may be summarized in the words that naturally there were a lot of tired feet, but glad hearts.

The grand banquet was staged on Saturday night after the completion of all else scientific, plenary and social. A good many of those in attendance already had departed. Still, it was a gala event marked, and not marred, by the briefest of addresses, and announcements of the names of the new officers, and of the site of the next triennial Congress. And so, off to Helsinki in 1957!

Not Specialists

ACCORDING to a survey made a short time ago, over 90% of the members of the American Academy of General Practice see industrial cases. Truly, this is the group of practicing doctors who undoubtedly do a good job of treating many industrial diseases and injuries. This, however, does not mark these practitioners as specialists in industrial medicine. Such services will always be in demand for, in all probability, there will never be a day when industry is completely free from job-connected injuries and diseases. From the statistics many of us have already accumulated, this curative aspect of medicine in industry, which is really a negative approach to health, represents a small part—less than 10%—of the work done in an up-to-date industrial Medical Department. The other greater portion—90% plus—represents the more positive approach to health: preventive and constructive medicine. The number of practicing physicians who apparently have no interest in this all-important phase of medicine is appalling. Until such time as the medical thinking of these doctors becomes geared to believing in this positive concept, the practice of constructive medicine will have to be carried on by a relatively few enthusiastic industrial and public health physicians.

—From an Address by KIEFFER DAVIS, M.D., at the University of Cincinnati Postgraduate School of Industrial Medicine, February 20, 1954.

Chest Injuries— and Iatrogenic Heart Disease

H. ARENBERG, M.D., New York City

IT IS NOW definitely established and widely accepted that cardiac trauma can result from injuries to the chest whether penetrating or nonpenetrating. If cardiac damage is not manifest immediately after the injury to the chest, careful observation and follow-up studies including serial electrocardiograms may eventually uncover damage to the heart in some instances.[1-8]

In most cases of chest injury where no cardiac trauma is detected after a careful study, recovery from the injury is complete. However, it occasionally happens that during the treatment phase of the chest injury or during the follow-up when careful attention is directed by the physician to the chest or precordium unfavorable events ensue in certain patients. In such cases, seeds may be planted in the minds of individuals with psychosomatic tendencies that give rise to suspicion or fear that there must be something wrong with the heart. This is more likely to happen in a clinic, where less time is spent in explaining to the patient and discussing reasons for certain procedures or examinations, than in a private office.

Depending upon the individual make-up of the patient, concern about his heart develops. As the treatment of the chest injury and follow-up examinations with x-ray films and heat rays over the injured part continue, the patient becomes more sensitized and a chain of symptoms soon appears, emanating from fear of heart disease. It seems that not even cancer arouses such fear as the suggestion that the patient might be suffering from a heart ailment. If a close friend or relative should happen to have died suddenly of a heart condition, while he himself has been under observation or treatment, a real cardiophobia ensues in the hypersensitive or psychologically vulnerable person.

The Literature

ACCORDING to Smith and Chapman,[9] "Heart disease due to anxiety may be the result of an unwarranted emphasis on some equivocal finding in a susceptible patient. Being unduly concerned about himself already he may become obsessed with the fear of sudden death or a heart attack after being told he has a murmur or a fast heart."

It is well known that in some individuals, cardiac neurosis insidiously develops following rejection for life insurance because of a heart murmur or because of rejection by the Armed Forces for a similar reason. Wood states that Da Costa's syndrome may be induced by the physician or by any person of authority. In his series of 66 cases of functional heart disease, the physician was responsible for its development in 17 instances.[10] Such neuroses, when definitely established and not accompanied by objective evidence of organic heart disease, are grouped under the classification of Functional Cardiovascular disease with subtitles such as Da Costa's Syndrome, Effort Syndrome, Soldier's Heart, or Neurocirculatory Asthenia.[11-14] One subgroup of functional heart disease is believed by many students of the subject to follow suggestion by the doctor and is consequently considered doctor-induced, etiologically. It therefore deserves special identity and is referred to as Iatrogenic Heart Disease.

Auerback and Gliebe[15] in 1945 appear to have been the first to have written under this heading, although iatrogenicity in general had been recognized long before.[10] In a scholarly paper on the subject Weinberg[16] defines iatrogenic heart disease as an "illness in which symptoms referable to the heart or symptoms interpreted by the patient as such, are produced as a result of the words or actions of a physician." The words or remarks taken by some patients too seriously are usually casual remarks such as "you have a slight murmur"; "you have a skipped beat"; or "your heart is slightly enlarged or it is irregular." Such remarks made by the physician carry even greater authority when expressed following fluoroscopic examinations, or the reading of an x-ray film of the chest, or an electrocardiogram.

The Causes

THE ACTS of the physician which may arouse the patient's concern about his heart include the manner in which he is examined and treated. Listening too long with the stethoscope over the heart arouses suspicion. Overtreating in length of time or frequency of visits in cases of chest injury, particularly if the injured rib or soft part is over the precordium, focuses the patient's attention on his heart. According to Weinberg "a vicious circle is thus established" where the fear and anxiety about the heart aroused by the physician's remarks or acts call for even more careful examinations and additional treatment with the consequence of an increased anxiety on the part of the patient.

In the course of a follow-up study of 250 cases

of chest injuries previously reported,[1] the writer himself was inadvertently guilty of iatrogenicity. A number of the patients who had sustained various injuries to the chest wall and had been carefully studied for possible cardiac damage, began to be more concerned about the heart than about the original injury. Some inquired why so many "pictures" or cardiograms were made, or why the stethoscope was so frequently used over the heart or with the blood pressure apparatus. For most of these an ordinary explanation seemed to suffice. But in other patients where concern about themselves pre-existed, the ground must have been made fertile for the development of iatrogenic heart disease.

Weinberg outlines the criteria for the diagnosis of iatrogenic heart disease: (a) The patient must have symptoms localized over the heart or precordium. (b) The symptoms must be traced to the fear of heart disease, initiated by words or acts of the physician. (c) There must be no objective evidence of organic heart disease.

As impartial examiner for the U.S. Employee's Compensation Commission, the writer had occasion to study cases of chest injuries where iatrogenicity was at least a contributory factor in the disability. To be sure, it is much more difficult to be on firm ground in the diagnosis of iatrogenic heart disease in traumatic cases than in nontraumatic. For in the former where the element of compensation or medicolegal adjudication is pending there is ample reason for subjective exaggeration. Nevertheless, with great caution and experience it is possible to evaluate with a considerable degree of certainty where malingering or exaggeration is the underlying motive and where a genuine cardiac neurosis or a fear of heart disease developed.

Illustrative Cases

CASE 1. A stevedore, age 63, had his "chest crushed" by a case weighing 600 pounds. There were no fractures. He was treated with physiotherapy for seven months. He developed symptoms referable to the heart, namely precordial pain and palpitation. The examination was entirely negative except for a bursitis of the left shoulder. The electrocardiogram was negative before and after an exercise test.

CASE 2. A 43 year old carpenter was struck over the precordium by a swinging draft. He was treated with heat over the chest every other day for 14 weeks. While he lost no time from work, he began to have symptoms of precordial pain and dyspnea following a sudden death in the family from a heart attack. Examination, including x-ray of the chest and an electrocardiogram before and after an exercise test, was negative.

CASE 3. A longshoreman, age 61, fell on the deck of a ship and struck the front of his chest. There were no fractures. He was treated with diathermy for 11 weeks, three times weekly. Following this, he was told that his blood pressure was high. Symptoms of cardiophobia developed soon after and continued. Examination showed a slight hypertension with no definite cardiac enlargement on fluoroscopy or 6-foot x-ray film. The electrocardiogram was negative. The urine, and eye grounds were negative.

CASE 4. A longshoreman, age 42, fell and struck his chest against the hatch coaming. He sustained fractures of the 10th and 11th ribs on the left side. He was treated with heat three times weekly for eight months. Six months after the accident he developed a fear that he might have injured his heart. Examination including a pre-and-post exercise electrocardiogram was negative.

CASE 5. An electrician, age 50, was struck over the front of the chest with an iron cross bar. There were no fractures. He was treated for 10 weeks with heat, after which he developed precordial pain and dyspnea and sweats. Another three months of similar treatment did not improve matters. Examination was negative except for a slight hypertension. The electrocardiograms were within normal limits. The heart was normal in size and configuration.

CASE 6. A longshoreman, age 42, was struck over the chest by a swinging draft. There were no fractures. After six months of treatment he developed symptoms of palpitation, precordial pain and dyspnea with or without effort and referred to the heart as the seat of the symptoms. Examination, including x-ray of the chest and an electrocardiogram, was entirely negative.

CASE 7. A wincherman, age 46, fell into the hole of the anchor and struck his chest. He sustained fractures of the 8th and 9th ribs on the left side. He was treated with heat for 10 weeks and was disabled for seven months because he was convinced that "something was wrong with his heart as he had a murmur and skipped beats." Examination was negative except for an occasional premature beat in the control electrocardiogram.

Comment

IN ALL the above cases the initial symptoms were localized over the area of injury and were not necessarily associated with, or referred to, the heart. It was after a long period of treatment, in most instances too long, with incidental remarks by the physicians that the symptoms began to be referred to the heart, rather than to the local area of injury. Hence the reference to iatrogenicity. Now, since medicolegal claims were pending in all instances, it was possible that the symptoms were somewhat colored for ulterior motives. However, the impression that prevailed was that a psychosomatic condition existed, that there was a genuine fear of heart disease, and that the symptoms were aggravated if not initiated by too long treatment and undue emphasis on the heart.

Summary

IATROGENICITY or doctor-induced disease has been known for many years to exist. Iatrogenic heart disease can result not only from inadvertent remarks by the doctor to a neurotic patient in general practice but also can follow in certain instances of chest injuries. It occurs usually in individuals with psychosomatic tendencies who have been overtreated and where too much emphasis has been given to the cardiac area in the course of treatment for the chest injury.

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References

1. Arenberg, H.: Traumatic Heart Disease. *Ann. Int. Med.*, 19:326, 1943.
2. Barber, H.: Contusion of Myocardium. *Brit. Med. J.*, 2:520, 1940.
3. Beck, C. S.: Contusion of the Heart. *J.A.M.A.*, 106:104, 1935.
4. Bilderback, A. C. L.: Traumatic Rupture of the Heart Without Fracture or External Lesions. *Brit. Med. J.*, 1:675, 1919.
5. Bishop, L. F. Jr.: Trauma and Its Relation to Heart Disease. *New York State J. Med.*, 11:1099, 1940.
6. Bright, E. F., and Beck, C. S.: Non-penetrating Wounds of the Heart. *Am. Heart J.*, 10:293, 1935.
7. Leinoff, H. D.: Direct Non-penetrating Injuries to the Heart. *Ann. Int. Med.*, 14:653, 1940.
8. Sprague, H. B.: The Effect of Trauma and Strain on the Production and Aggravation of Heart Disease. *Bul. New York Acad. Med.*, 23:631, 1947.
9. Smith, Jackson A., and Chapman, D. W.: Description and Treatment of Heart Disease Due to Anxiety. *J.A.M.A.*, 155: 632, 1954.
10. Wood, P.: Da Costa's Syndrome. *Brit. Med. J.*, 12:767, 1941.
11. Friedman, M.: Functional Cardiovascular Disease. Wilkins, 1947.
12. Conner, L. A.: Cardiac Neurosis in Diagnosis and Treatment of Cardiovascular Disease. *Stroud.*, 1:196, 1940.
13. Friedberg, C.: Diseases of the Heart. Saunders, 1012, 1950.
14. Gillespie, R. D.: Psychological Medicine and the Family Doctor. *Brit. Med. J.*, 2:263, 1944.
15. Auerback, A., and Glibbe, P. A.: Iatrogenic Heart Disease. 5:388, 1945.
16. Weinberg, H. B.: Iatrogenic Heart Disease. *Ann. Int. Med.*, 38:9, 1953.

Posture and Driving

It is now accepted as a principle that machines should be designed to fit the worker, and that the worker cannot always be expected to fit the machine. The importance of the design of the driver's cabin in relation to his anatomical and physiological requirements has been realized in recent years, and much improvement has taken place in the design of cabins. The principles involved in the design of the driver's seat and of the arrangemert of the display and controls were described by Darcus (1948). Bramley and Glynn (1945) discussed the design of car seats in detail. Hugh-Jones (1947) determined experimentally the optimum angle of flexion of the knee required to produce the greatest pressure with the least effort on a foot-pedal; it was found that the pressure which could be exerted increased with extension of the knee-joint until a well-defined "limiting angle" was reached at 160°. Beyond this point there was a sudden fall in the maximum push which could be exerted. Similarly it was found that greater pressure with less effort could be exerted on the conventional pull-on type of hand-brake than on one operated by pushing. Stevenson (1951) surveyed published work on the physiological effects of vehicle-riding on the driver and passengers, particularly in relation to comfort and fatigue. Although there is no satisfactory method of measuring fatigue before the stage of exhaustion is reached, it was found that vibration of the body in a vertical direction at certain amplitudes and frequencies was less disturbing than horizontal vibrations. This paper also describes the design of seats in some detail and gives a useful bibliography concerning the effects of riding in vehicles on the human organism. About as frequently as other people, drivers suffer from prolapse of the intervertebral disc between the 4th and 5th lumbar vertebrae. When the acute condition has subsided, the patient is usually able to resume driving duties. He may drive in a plaster-of-Paris jacket, provided that the lower edge of the plaster is not so low as to impede flexion of the thighs. Subjectively, drivers who work in plaster jackets frequently state that they feel more comfortable than they have felt for years.

—From: "Some Medical Considerations in the Occupation of Driving Road Vehicles." The John C. Bridge Memorial Lecture by L. G. Norman from the London Transport Executive: *The Transactions of the Association of Industrial Medical Officers*, 4:1,3 (April) 1954.

Percodan for Pain in Industrial Practice

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PAIN control probably plays a greater role in industrial practice than in any other branch of medicine. The number of patients requiring pain sedation seen by physicians engaged in this specialty field is considerably higher than that encountered by the general practitioner. The variety of traumatic lesions for which treatment is required is manifold, and the need for speedy and adequate relief from pain is constant and urgent.

Numerous pain-relieving drugs, such as morphine, pantopon, dilaudid, demerol and newer synthetics are employed for the alleviation of severe pain. All such drugs possess habit-forming potentialities. For those frequent cases which do not need this type of analgesics but do not respond to mild drugs like aspirin or aspirin compound, only one medication, codeine, has heretofore been available and for many years codeine alone or combined with aspirin, phenacetin and caffeine has been used of necessity whenever relief of moderate pain had to be provided.

In several respects codeine and codeine combinations are not entirely satisfactory. It takes considerable time for these medications to take effect, especially when administered by mouth, the duration of action is often short, and relief of pain is not always adequate, particularly in cases of acute pain.

Many of our patients are miners who are apt to suffer accidents with resulting sudden pain, and we had long recognized the desirability of having at our disposal a more satisfactory analgesic. When Percodan, a new compound for relief of moderate pain was offered and claims were made that Percodan was superior to APC plus codeine, we welcomed the opportunity to investigate its properties and to ascertain whether it would offer advantages in our practice.

Percodan contains no codeine. Instead, its main pain-relieving constituent is dihydrohydroxycodeinone, an important advance in codeine chemistry. Dihydrohydroxycodeinone, while structurally related to codeine, has separate chemical and improved therapeutic characteristics. For example, it is reported to exert a more selective influence on the pain centers than codeine and in smaller doses to be more effective than codeine in providing analgesia.[1,2,3] It is supplied in oral tablets, each of which contains 1/12 gr. of dihydrohydroxycodeinone salts plus 3½ gr. aspirin, 2½ gr. phenacetin and ½ gr. caffeine. It also contains a small amount of homatropine terephthalate to increase its tolerability.

This report relates to our findings in the study of Percodan compared with APC plus codeine. The potency of dihydrohydroxycodeinone on a weight basis is estimated to be four to five times greater than that of codeine. Since each tablet of Percodan contains 1/12 gr. of dihydrohydroxycodeinone salts, the equivalent in codeine is ⅓ gr. to 5/12 gr. However, tablets APC plus these amounts of codeine are not readily available. We undertook, therefore, to make the comparison of Percodan tablets with APC tablets plus ½ gr. of codeine, although we realized that this discrepancy weights the results in favor of codeine.

Patients for our investigation were not selected according to specific criteria, but for the duration of one month all patients who required relief of moderate pain were treated with Percodan. The same class of patients was treated the next month with APC plus ½ gr. of codeine. Both preparations were administered orally.

The Percodan group comprised 96 patients (80 male and 16 female), the control group (APC plus codeine) consisted of 71 patients (60 male and 11 female).

Their ages varied from 21 to 65 years with an average of 40 years. The types of traumatic injuries for which either one of these drugs was used are listed in Table I.

Each drug was prescribed in doses of only one tablet in order to obtain an adequate basis for evaluation of effects. The first tablet was given in the office. Before leaving, patients were provided for home use with a supply of the drug studied that month. Upon return to the office, patients were carefully questioned with regard to onset of relief and duration and quality of anal-

TABLE I.

Diagnosis	Number of Patients
Contusions	76
Lacerations	37
Fractures	22
Crush	12
Sprains	7
Burns	6
Muscle tears	3
Abrasions	2
Amputations	2
Total	167

TABLE II.

	Percodan	APC Plus ½ gr. Codeine
Effective within one hour	72	23
Effective after more than one hour	23	47
Ineffective	1	1
Total	96	71
Duration of effect three hours or more	32	14
Duration of effect two to three hours	54	47
Duration of effect less than two hours	10	10
Total	96	71
Complete pain relief	73	51
Partial pain relief	22	19
No pain relief	1	1
Total	96	71

gesia. These data are contained in Table II. They were also asked to mention such untoward reactions as they might have experienced.

Prompt alleviation of pain was experienced by 75% of our patients who were treated with Percodan, but only by 32%, or less than half this percentage, of patients who took APC plus codeine. Patients who took Percodan frequently reported onset of relief within 15 minutes after administration of the drug.

It was also objectively observed that relief was faster with Percodan than with APC plus codeine. After taking Percodan in the office, patients waiting for transportation home often felt sufficiently relieved to start discussing their accident with other waiting persons. On the other hand, individuals who received APC plus codeine until their departure usually sat silent and depressed because of pain.

Relief for three hours or more was provided for 33⅓% of our Percodan patients, but only for 20% of the patients who were placed on APC plus codeine.

More than 75% of our Percodan patients obtained complete relief of pain, while 71% of the APC plus codeine patients experienced a similar degree of relief.

There was a clear difference in the quality of pain relief provided by the two drugs. Most of the patients on APC with codeine mentioned that their pain was lessened but that they did not feel really comfortable. In contrast, those who were treated with Percodan often volunteered the information that the pain had completely disappeared and that they experienced thorough pain relief.

Side effects were encountered in both groups in a limited number of patients. The reactions consisted of nausea, vomiting, dizziness, and constipation. However, there was less gastric upset and nausea with Percodan than with APC plus ½ gr. codeine. Percodan was used in a few patients whose intolerance to codeine was known and it proved to be better tolerated. In these individuals, however, Percodan could be employed only for varying periods of time without complaints of nausea being made.

There is a considerable distinction between the two compounds with regard to constipational effects. While a great number of patients taking codeine reported "sluggish bowels" or constipation, this was an exception when Percodan was given. During the month that codeine with APC was studied many patients felt tired and fatigued because the codeine combination caused sleeplessness when taken at bedtime or resulted in a hangover the next morning. Such incidents were the exception with Percodan.

None of the side effects was of a severe nature or prevented patients from continuing either medication. No evidence of addiction was observed in any person.

Encouraged by the results obtained in alleviating the pain in industrial traumatic accidents, we continued the use of Percodan in a mixed series of traumatic and medical conditions. Table III presents data on 390 such cases.

The average number of tablets dispensed to each of these 390 patients was 12. It was found that this was the maximum amount required for most cases wherein pain was limited to the first 24 to 48 hours. In a number of severely painful conditions, 24 to 36 tablets were needed.

The initial dose was one tablet and then one

TABLE III.

Type of Case	No. Treated	Toxic Effects (nausea and vomiting)	No. Tablets per case
1. Lacerations, severe, requiring more than six sutures	42	3	12
2. Lacerations, mod.-severe requiring less than six sutures	31	3	6 to 12
3. Amputations (only phalangeal amputations were done)	18	1	18 to 24
4. Fractures:			
(a) Phamnges	54	5	12
(b) Wrist:			
(1) Radius	8	0	12
(2) Ulna	1	0	12
(3) Both radius and Ulna	6	0	12
(c) Clavicular	2	0	12
(d) Rib	22	2	18 to 24
(e) Ankle:			
(1) Ext. Malleolus	3	0	12
(2) Int. Malleolus	2	0	12
(3) Both Ext. and Int. Malleoli	1	0	12
(f) Metatarsal	3	0	12
(g) Metacarpal	3	0	12
(h) Mandibular	1	0	12
5. Bursitis (shoulder)	30	1	12 to 18
6. Contusions, severe:			
(a) Chest	40	2	12
(b) Upper and Lower extremities	50	2	12
(c) Head	4	1	12 to 24
7. Dislocations:			
(a) Thumb	1	0	12
(b) Shoulder	3	1	12
(c) Elbow	1	0	12
8. Postoperative:			
(a) Digital amputations done by surgeon as outpatient	1	0	24
(b) Removal of medial meniscus (postoperative)	1	0	18
9. Pleurisy	15	3	12
10. Thrombophlebitis	2	0	24
11. Neuralgia:			
(a) Intercostal	6	0	12
(b) Sciatic	1	0	12
(c) Facial	1	0	12
12. Post-Epileptic:			
Headache	1	0	12
13. Concussion:			
Brain	2	1	12
14. Boils	3	0	12
15. Sinusitis	25	3	12
16. Herpes Zoster	6	1	24
	390	29	

as needed but not more frequently than every three hours. In most males, it was observed that three-hour intervals were average for trauma involving the phalanges of both upper and lower extremities, chest pain resulting from rib fractures, and fractures around the ankle. Four-hour intervals sufficed for most contused areas. Longer dosage intervals up to six or eight hours were found possible in most medical cases. During sleeping hours pain control usually was potent and lasting enough to permit a full night's rest.

In women, with the exception of pleural pain—this was true of males too—four-hour intervals generally were found feasible.

Nausea was experienced in about 7½% of all patients treated. This figure resulted from a number of instances where the dose schedule was not followed as directed and patients took the drug at one- or two-hour intervals or two tablets in one dose. This is a human factor over which one has no control in outpatient therapy.

Convinced by these experiences of the superiority of Percodan for the control of moderate pain, we have now established it in our practice as routine treatment for this purpose to the exclusion of codeine-containing medications.

Comment

THE MOST common complaint for which the physician's aid is sought is pain. This symptom required treatment long before modern man started to develop new medications. Nevertheless, for the most frequent type of pain, moderate pain, the only drug until recently available has been a natural substance, codeine. Many attempts have been made to produce analgesics with more satisfactory properties than codeine but none has been more successful than the development of dihydrohydroxycodeinone, a codeine derivative with a selective pain-relieving effect.

Percodan, containing dihydrohydroxycodeinone as its principal pain-relieving component, has been tested clinically as compared to APC plus codeine. One hundred and sixty-seven patients who had suffered accidents were studied with regard to pain relief—140 males and 27 females.

For one month an oral tablet of Percodan was given to each injured patient requiring relief of moderate pain and for the next month one tablet APC plus ½ gr. codeine was administered to a similar group. Each patient was given a supply of that month's analgesic combination for home use to be repeated as required.

It was found that more than twice as many patients obtained relief within one hour from Percodan as from APC plus codeine. With Percodan, sustained relief was provided in one-third of all patients as compared to one-fifth only of the patients on APC plus ½ gr. of codeine; and the degree of relief with Percodan was considerably higher than that obtained with APC plus codeine.

Observations in 390 additional patients with traumatic and medical conditions confirmed these findings.

Summary and Conclusions

THE VALUE of Percodan for relief of moderate pain following accidents was first studied in a non-selected group of 96 patients. Seventy-one patients on ½ gr. codeine plus APC served as control. This was followed by the use of Percodan in an additional 390 patients requiring relief of pain caused by a variety of disorders, both traumatic and medical. The pain-alleviating properties of one tablet of Percodan surpass those of one tablet of ½ gr. codeine plus APC. Relief from Percodan is more thorough and satisfactory to the patient. Onset of relief was prompt in 75% of the patients treated with Percodan and in only 32% of the patients on APC plus ½ gr. of codeine.

Fifty per cent more patients experienced extended pain relief from Percodan than from APC plus codeine. Extended periods of time uninterrupted by pain contribute to the patient's mental and physical feeling of comfort and help provide speedier recovery.

Gastric upset from Percodan is less than from APC plus codeine. Constipation, so frequent with codeine, is seldom encountered with Percodan. No serious side effects were encountered, and no signs of habituation were observed.

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References

1. KRUEGER, H., EDDY, N. B., and SUMWALT, M.: Pharmacology of Opium Alkaloids. Federal Security Agency, U.S.P.H.S. Supplement 165 to Public Health Reports, U.S. Government Printing Office, Washington, D.C., 1943.
2. BLANK, P., and BOAS, H.: Improved Analgesia for Moderate Pain. *Ann. Western Med. & Surg.*, June, 376, 1952.
3. COZEN, L.: Office Orthopedics. Lea & Febiger, Philadelphia, 1953, pp. 120, 138, 145, 156, 234.

The Leisurely Future

THE LIFE of the human spirit faces two dangers, both appallingly powerful and urgent. One is laziness; the other is tyranny. It is perfectly possible that by the year 2000 the civilized world will have grown so rich and so comfortable, and so deeply devoted to simple asinine pleasures, that thought will be abolished or else reserved for a few wily Managers and Experts. It is perfectly possible that education will dwindle away into nothing more than job training and courses in social and family relationships, and that life will collapse into a series of delightfully similar days—a few hours' mechanical routine followed by jolly picnics and cheap amusements. It is possible, though not likely.

—From "Man's Unconquerable Mind," by GILBERT HIGHET, published by Columbia University Press; book condensation in *Readers' Digest*, August, 1954.

Objectives of A Modern Industrial Health Program

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ONE OF the satisfying things about work in the industrial health field is that we are "on the side of the angels," and find it good business to be there. Our problems usually stem from lack of financial support, but not from lack of moral support. Management may have once looked upon each employee as simply a pair of hands, or a strong back. But today I do not question management's desire to maintain the health of each employee.

Management must get a satisfactory return on the investment it makes in industrial health. But the return on this investment is usually so elusive and intangible that few have been successful in measuring it. Most have been forced to be content with assumed returns in the forms of reduced absenteeism, lessened turnover, or better employee attitude with resultant higher productivity. These are easily said, but hard to prove when trying to justify an increase, or perhaps even the continuance of certain industrial health programs.

So the first objective of a modern industrial health program, and perhaps the most difficult of attainment, is the setting up of yardsticks by which the effectiveness of effort in this field can be measured. Absenteeism, for example, is often used as one of the yardsticks for measuring the effectiveness of the industrial health program. Yet this yardstick is subject to so many other influences that its validity is highly questionable. Some of the factors that improve a plant's absenteeism are:

Good weather—Absenteeism is normally lowest during the second and third quarters of each year.

Male, rather than female employees—Men are usually absent about two-thirds as much as women.

Economic depression—Absenteeism hit a 25-year low during the great depression.

Good employee relations—Absenteeism is lowest when employees like their work, like their boss, and are well accepted in their work groups.

Each of these factors can cause a swing of 30% or more in absenteeism, and all are outside the control of the plant doctor. So, absenteeism, from management's standpoint, leaves much to be desired as a measure of performance. Employee turnover, workmen's compensation costs, and employee morale have similar drawbacks when used as yardsticks to evaluate industrial health effort.

I am hoping to find a yardstick in the field of employee effort. Let us assume, for example, that an industry is paying its employees an average of $4000 a year, and spending an average of $20 a year for maintaining the health of each employee. The management is interested in the well-being of its employees but also has the responsibility of spending the owner's money in the over-all interest of the owner. Management does not know whether it is extravagant in spending $20 per year on each employee, or whether it could wisely spend two, three, or five times that amount. The yardstick I am seeking will be related to the employee's earnings and effort. Here is what might be considered. It seems likely that most employees (and that includes many of us) do not work at top effort, or top efficiency, except in spurts. Time is wasted gossiping, in extra minutes in the washroom, in just plain dawdling at the job. Effort is wasted in doing things inefficiently for lack of knowing the best way, or effort may be wasted deliberately. Many employees have poor vision and do not see as well as they might if fitted with proper glasses, or may not work as hard as they might if they had better health, or have as good an attitude as they might if working conditions were letter. It is probably safe to guess that if we could correct all of these things worker productivity might go up 20 or 30% or more. What has this to do with medical yardsticks? Just this: Except for a man's own supervisor, it is likely that the industrial nurse or doctor will see and talk to each employee more often than anyone else representing the company to the employee. In most plants each employee will see the nurse an average of once a month. If, as a result of these visits, the employee is encouraged to believe that his management is sincerely interested in his well-being, isn't it likely that he will put forth a little greater effort, a little greater care. A little greater effort on the part of each employee will more than repay the cost of the most progressive of our employee health maintenance programs. For example, an annual health check-up for each employee could normally be done for a cost on the order of $25 for each person examined. If the employee's response to this check-up were to put forth 5% more effort he would be returning about $200 for the $25 investment! Only 1% more effort would return $40—more than enough to repay the cost with margin to spare. So the yardstick I hope to find will be related to productivity.

THIS brings me to the second objective, which I would say is for each industrial medical unit to establish its own goals consistent with the over-all objectives of the business of which it is a part. There is no reason to assume that the objectives of a modern industrial health program should be the same for every business. All of us, can accept objectives like: to keep employees at work; to make them willing, eager if possible, to give their full

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skill, care, and effort to their jobs; to avoid rather than simply cure industrial disease or accident; to render first aid. But are we understanding of the problems of industry when we dogmatically say that an approved industrial health program shall include complete pre-placement and periodic health examinations by a doctor; adequate facilities under the charge of a doctor; employee health education; adequate health records; etc. That type of program fits our large established industrial plants. In fact, in the case of my own company, General Electric, we opened in July a new industrial health clinic at our Schenectady Works that cost over a million dollars. Would such a program, though, be feasible for a business temporary in nature like some logging operations; or seasonal like some harvesting and canning operations; or fit a new business desperately short of capital? I would think not. In fact, I suspect that one of the reasons why industrial medicine is lagging in small businesses is the fact that we set the target so high that they do not even try to reach it. How much better it would be if each business were encouraged to set its industrial health program on a basis consistent with its other objectives.

During the past two years I have visited and inspected, as part of my job, the industrial health facility in each of over a hundred different plants within and outside of my own company, and both in America and abroad. These have ranged in size from one employing 24 persons to one having over 30,000 employees. In each of these widely different plants there has been a similarity of management's interest in the well-being of its employees, but great differences in the ability to provide better job environments or improved health maintenance programs. So it has seemed to me that, rather than set an identical target for each plant, it would be wiser to set individual goals that had a chance of being reasonably attained—at a later time new goals might be set.

THE THIRD objective is to develop and follow a set of ethics consistent with our objectives. The medical profession has many critics today and most of the criticisms fall in the field of ethics. They include disapproval of a scale of fees varied to income, fee splitting, and one doctor's reluctance openly to criticize another. These are not aimed primarily at the industrial doctor, but he is not free of ethical problems. For example, the medical profession has tended to disapprove the paying of salaries to physicians and to encourage the charging of fees for services rendered. Let's see how it works when we hire a part-time doctor for one of our small plants. I shall refer to an actual case of a plant I visited this year which was suffering from extensive and expensive turnover. This plant has 500 employees, mostly girls. Some work a few months and then get married; others work awhile then leave for better jobs. The result is a labor turnover of about 100%. That means that the plant must hire about 500 new employees the year in order to maintain its employment at 500 throughout the year. Each of these new employees must be taught her new job, must be added to the payroll, and made a part of the employee insurance and benefit plans. It is estimated that it costs nearly $300 to add a new employee and bring her up to normal productivity. So this high turnover is costing this plant $150,000 a year.

What has this to do with the doctor? He gets $5 for each pre-placement examination he performs. So the higher the plant turnover the more he gets. Likewise, he is paid on a fee basis for each industrial injury at the plant. So, the more injuries at the plant the more fees. Moreover, there is no fee nor inducement to the doctor to go in the plant, look for job hazards, and try to lessen accidents and reduce turnover. It is actually the other way. The doctor's compensation goes up in proportion to the plant's troubles. Other members of management expect to be paid in proportion to the plant's successes rather than its failures. Then why not have the doctor paid on a basis such that the better industrial health he brings a business the higher his earnings? In other words pay him better for his ounce of prevention than for his pound of cure. From management's standpoint it would make more sense to pay him a salary (a good one) to keep well employees well, to protect these employees by carefully watching their job environment, and to call attention to things that might cause accidents.

When management decides to put its part-time doctor on a retainer basis, instead of a fee-per-visit basis, it might consider giving him "employee status." In the case of companies with advanced employee benefit plans this arrangement provides special benefits not otherwise obtainable. From the doctor's standpoint the retainer fee, or salary, provides a dependable source of income, but more important to him may be the opportunity to take part in the employee pension plan, special stock purchase or savings plan open only to employees, and low cost group life insurance plans. From management's standpoint, giving the part-time doctor employee status has advantages, too. It will often provide enough added inducement to attract a higher caliber doctor than the salary alone would attract. It tends to make easier the acceptance of the doctor as a part of management. And it encourages the doctor to provide the management, of which he is now a part, with an industrial medical program fitted to the needs of the plant. By giving the doctor employee status the company can insist that the doctor keep up-to-date in his field, and can direct him to participate, at company expense, in meetings, clinics, or postgraduate courses that assure his increasing his professional competence.

A second area in the field of ethics has to do with outside practice. Many industrial physicians, at what are considered full-time jobs, are paid so little that they feel forced to develop outside practices. These take time and interest away from their industrial jobs. The correction might be raising their salaries with the provision that they drop the outside practice.

THEN there is the matter of the relationship with the community doctors—a delicate one for the industrial doctor. If he expands his in-plant service, the private practitioner feels he is being discriminated against. If he keeps the in-plant service limited to industrial illness or injury, many employees will be sore at management for failing to let them have simple medical attention for personal ills. Solution? Probably it lies in the doctor adhering to the principle that all non-industrial patients will be referred to their own physicians if the matter is serious or if it seems likely that one or more re-visits will be necessary. This does not exclude the many simple administrations like easing a headache, or dressing a simple injury, but does exclude the type of personal injury or illness that could be major or is likely to be prolonged. Examples might be the care of a severe sprain, setting a broken bone, or treating a persist-

ent non-occupational dermatitis. However, it should be remembered that the industrial doctor and nurse have a responsibility not only to keep well employees well and able to work, but also to help create in them an attitude of willingness, even an eagerness if possible, to work. This requires time on the doctor's part to counsel with employees on those personal problems that interfere with work. The doctor can render a particularly valuable service in areas like alcoholism, whether advising the employee about himself or a member of his family.

It is worth mentioning at this point that there seems to be a growing realization on the part of community doctors that good industrial medical programs assist them rather than compete with them. They aid them by uncovering disabilities that call for treatment by the employee's own doctor—cases that otherwise might have gone unnoticed until too late for treatment.

These are just instances, or details. The important thing is that the industrial medical profession needs to develop and practice a code of ethics in every phase of its work. And it must develop this code to fit its own needs which may differ from some of the things long considered best for the private practitioner. So if I were to set the three objectives I think most important for industrial medicine today I would say: (1) Diligently seek a set of yardsticks by which the value of their work can be measured. (2) Participate with management in establishing industrial medical services tailored to the broader objectives of the business of which it is a part. (3) Reach towards the development and practice of a set of industrial medical ethics that will bring the lasting admiration of all the people for the deserving work that is being done in this field. Attainment of these objectives will help get management's financial support for the expansion needed in the field of industrial health, will help attract talented young men to this field, and will make it more likely that worthy contributors in this field will be recognized for the value of their efforts.

IT IS heartening to those of us working in the field of industrial health to see the growing recognition coming to the industrial doctor. For too long a time his services were undervalued. There is thus a special need that we encourage this upward climb of opinion by attracting good men to this work, giving them proper training, and then seeing that they choose to continue in this rewarding area of service to others.

The General Practitioner

CAN scientific treatment be compatible with compassion? It has been stated that physicians today know more about medicine than they do about patients. The author believes that in this regard the general practitioner has a place in medical and industrial integration, whether it be local, regional, or governmental including the application of health insurance. He can well be the herald and exponent of good medicine and, at the same time, may be especially useful in psychologically evaluating the patient as a person. The general practitioner can have a special position in the community of industry because of his intimate knowledge of the home environment and living conditions of the worker. In recent years, employers in both large and small plants have taken an increasing interest in the health problems of their employees, which extends to their homes. Claim examiners have long known the relation of home conditions to frequency and severity of injury. As was indicated in the discussions of the Congress of Industrial Health, 1953, industrial medical and health organizations are much more concerned as to the ability of the general practitioner to extend the scope of his service to the health problems of industry.

—"The G.P. in Industry," ORRIS R. MYERS, M.D., in *California Med.*, quoted in *Illinois Med. J.* August, 1954.

Industrial Medical Association

President's Page

IN YOUR President's absence abroad a group of deeply interested advisers to the Occupational Health Institute met in New York and wrestled with some problems of policy. The most difficult problem involved the question of how properly to set a scale of membership fees in the Institute. This question was happily resolved and the Institute's Board of Trustees has unanimously approved of the recommendations developed from the constructive and helpful suggestions of the interested group.

As may be realized, the number of prospective members for such an organization as OHI is limited only by the perception and conviction of employers that a sound program of constructive health maintenance is an essential responsibility of management and that some outside organization like the Institute can be helpful in meeting that responsibility. How, then, do we proceed to enlighten our friends in management, and what fee can reasonably be charged that will be acknowledged as a business expense?

Our Board of Trustees believes that the work of the Industrial Medical Association—through its functioning agency, the Occupational Health Institute—in helping industry to maintain minimal standards for medical services in industry is actually a conservative factor of almost incalculable value. In reducing absenteeism and labor turnover while improving morale and increasing productivity, a soundly administered employee health program does far more than pay for itself. It contributes generously to our national wealth—it provides the priceless asset, the assurance of continuing good health.

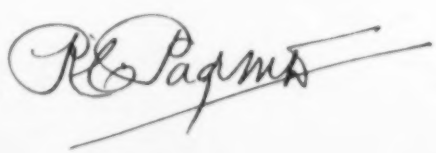
The company with enlightened management understands the need for an outside agency to establish yardsticks by which to measure progress. It wants a clearing house through which it can share in the experience and researches of others. It wants aids for its Medical Department, and suggestions for solutions of its problems in the health field.

The Occupational Health Institute was formed and exists for the purpose of filling the needs and supplying the things wanted in these and all other respects of employee health conservation and maintenance, under all the circumstances of employment. For the proper and continuous functioning of the agency dedicated to these purposes, we believe that industry will gladly provide adequate support through membership and by means of additional contributions.

The Board of Trustees of the OHI has therefore authorized us to accept membership applications from any company or other organization which provides full time in-plant medical service, for an annual fee of $100 for each such unit. Associate memberships at $25 each are available to any other company or unit not so equipped. Individuals may also join as associate members. This is especially designed to include any physician serving as a contract surgeon or in a clinic specializing in industrial medicine. It also makes a place for personnel directors, labor relations people, union officials, and other executives who may be interested in this important phase of management responsibility.

FINALLY the Board has recognized that many companies wish to support the program out of funds which are available for contributions to projects deemed worthy. To these companies the OHI offers a Contributing Membership. The amount contributed may be much or little. It may be that the company will want a number of units to be listed as members and will contribute more than enough to provide for such memberships at the scheduled rate of $100 each, directing the Institute to use the remainder for its educational program either in general or specific terms.

With these three classes of membership available the Institute is confident of a prompt and enthusiastic response to its invitation to membership which will soon be going out to all companies served by members of the Industrial Medical Association. Will you do your part to insure the success of the OHI?



Books

ATLAS OF ORTHOPEDIC TRACTION PROCEDURES, by CARLOS SCUDERI, M.D. C. V. Mosby Company, St. Louis, 1954.

This 228-page volume is replete with excellent illustrations and complete descriptions of all of the commonly used orthopedic traction procedures.

A study of the illustrations is usually sufficient to give the reader a clear picture of the method. The discussion goes into minute details, yet the text maintains a simplicity of style which makes for easy reading and clear understanding. In the early chapters there is a discussion of the necessary orthopedic and fracture equipment which should be in various sized hospitals handling such cases. The equipment illustrated is listed as to manufacturer. The principles of applying skin traction and skeletal traction are thoroughly discussed.

This work should be in the Medical Library of every hospital and should be required reading for every intern and resident on an orthopedic or fracture service. It will be of great value for the average general surgeon who handles only occasional fracture cases. Even the fracture specialists will find much of interest and value in it; and it will aid in facilitating the teaching of at least the routine procedures in the handling of the majority of fractures which require traction procedures.

Dr. Scuderi is to be congratulated on the excellent job he has done in the preparation of this timely volume. —CHESTER C. GUY, M.D.

Exemplary Symposium

FOUNDERS' DAY PROGRAM, HEALTH ASSURANCE FORUM, March 11, 1954: BURGESS L. GORDON, Editor. Woman's Medical College of Pennsylvania, Philadelphia, 1954, pp. 79, free.

This Journal is pleased with itself in that long ago it went on record in emphasizing that the most practical procedure in education in occupational health for those already in practice is the intensive brief conference, inservice training course, or symposium. The publication identified above is the record of a superb instance of that form of instruction, and, in this instance, a single long day. On that day notable speakers assembled and addressed themselves to such subjects as industrial rehabilitation, retirement, medical needs in large and small industries, absenteeism, the abnormal work environment, labor's contribution to occupational health, and management's contribution to occupational health. Speakers included among others BURGESS GORDON, ANTHONY J. LANZA, ANNA BAETJER, WILLIAM A. SAWYER, RONALD F. BUCHAN, MARY SWITZER, EARL C. BONNETT, EDWARD C. HOLMBLAD, LEO PRICE, NORBERT J. ROBERTS, BAYARD L. ENGLAND, GEORGE MORRIS PIERSOL, and DONALD C. RUBEL. The day's activities—37 speakers and 19 major topics. The outstanding aspect of the Conference was that so much was presented in a single day. The title "Health Assurance Forum" is a bit deceptive, or perhaps only confusing. The term "Assurance" is the equivalent of "insurance" in some quarters and notably in England. This Symposium is little concerned with insurance and otherwise is better described as a forum on preventive medicine in general and occupational health in particular. Medical schools as a group notoriously are backward in grasping the health implications of our present-day industrial culture. Here is one medical college, the Woman's Medical College of Pennsylvania, that presents itself with all such scales knocked off its eyes.

Medical Testimony

PHYSICIAN IN THE COURTROOM: Volume I, Law-Medicine Series: LESTER ADELSON, CLINTON DEWITT, SAMUEL R. GERBER, and ALAN R. MORITZ. The Press of Western Reserve University, Cleveland, Ohio, 1954, pp. 99, $2.00.

Page by page this small book is chock-full with substance. Many years ago after DR. CARL J. WIGGERS had presented a distinguished medical address, an objective critic observed, "Not a single wasted word." That same tribute may be applied to this book, "Not a superfluous syllable." In many publications contributed to by several authors, some chapters are so good that others appear shameful. Not in this book. It starts high and keeps high. It is difficult to believe that four authors (for that is the number of major sections) could have written with such unanimity of thinking. That accomplishment may reflect the work of the editor. If so, he has achieved a desirable homogeneity but without any affront to individuality. Three of the sections are specialized and notably two, viz., "Injury and Cancer" and "Trauma and Heart Disease." The fourth, by DR. GERBER, is every physician's chapter—"Expert Medical Testimony and the Medical Expert." With more documentation than dramatics, DR. GERBER goes about the assignment of telling all physicians what is expected of the physician in the witness chair, how to be useful, how to avoid missteps. One of the baited traps of medical testimony centers about books, the "authorities." A part of what this author writes about books here is introduced since for a few it may be useful tomorrow or next month.

"In discussing the pre-trial conference it was said that the attorney should be provided with references which will support the testimony of his expert witness as well as those which may refute such testimony. It was also stated that attorneys should consult with the expert witness on any conclusions which he, the attorney, has drawn from reading such textbooks. This is important when hypothetical questioning is formulated from reading such literature and interpreted as the attorney believes it relates to his case. Perhaps it would be well here to review some of the rules governing the introduction of textbooks in court procedures.

"Textbooks cannot be introduced to impeach a witness unless he is familiar with the writings or has stated that he based his opinion on such authority, specifically naming the textbook. The reason is that the author is not under oath and is not subject to the test of cross-examination.

"It is, however, proper to cross-examine an expert witness with reference to data which form, in whole or in part, the basis of an opinion by him. When a particular authority had been relied on by the witness, it is proper to test his knowledge and the accuracy of his deductions by drawing his attention during cross-examination to the expressions of that particular authority. This is not permitted for the purpose of using the selected extracts as evidence but to enable the jury to weigh better the testimony of the expert."

While this book does not tirade against the low quality of much medical testimony in the courtroom, it is a commonplace observation that much remains to be brought about on the desirable side. Granting this to be true, always the remedy is available. This book is part of the remedy.

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Industrial Nurses and the Naples Congress

AT THE Naples International Congress on Industrial Medicine (September, 1954) the industrial nurses, in their planning for their own international organization, gained a victory. This victory may have been a small one but it was not a Pyrrhic victory. The Commission recognized a close and desirable relationship between physician and nurse in industry. Tacitly, and probably even a little formally, the Industrial Nurses International organization already has been recognized and sponsorship has been proffered. It is necessary to adhere to guarded language throughout this comment since what precise action took place is uncertain; there was a welter of proposals followed by a series of complex official actions. The chief difficulty relates to language—a difficulty since six different languages were involved in the discussion, and no single person present could grasp the significance of all of them, although many were masters of three or four.

It was recognized that at the present time only the United States, Canada, and the British Empire make use of nurses in industry. Some countries utilize assistance more in the nature of social service than actual nursing as it exists in the United States. The French delegation was insistent that the industrial social workers be recognized as equal to nurses, but this proposal was defeated. As to the three countries mentioned it was formally agreed that should vacancies exist in delegations and should the physician members of the delegation vote favorably, at least one industrial nurse might be elected to the official delegation of these respective countries. These three or more nurses would be clothed with a titular status and in all respects would serve as other titular members of the Commission. That was the victory.

Here are the difficulties. At least in the United States there are no vacancies in the delegation. Numerous physicians who attended the Eleventh Congress, and some who attended both the London and Lisbon Congresses, hope patiently that their well displayed interest will earn a membership in the official group. They will not be placed if preceded by nurses, and already casual promises have been made by the official delegation that when one or more vacancies arise this or that name will be brought up for discussion for possible subsequent nomination to the plenary body which is the final electing group. This means that no existing nurses' organization in the United States itself may do other than to nominate one or more nurses for consideration by the official medical delegation if, as, and when vacancies arise. In no sense may it be inferred that any degree of objection, and certainly no hostility toward an international organization of industrial nurses, exists in the attitude of the present delegation. To the contrary sponsorship is hearty, but not through the displacement of better deserving physicians.

THIS perplexing matter by no means is hopeless. At Naples three formal proposals were introduced, any one of which would have eliminated the dilemma. The first of these would have provided an increase in the official delegation by six additional members for every country. The second was that, regardless of a country's size or extent of industrial activities, every nation have equal representation and equal to the present maximum presently authorized for any one country which would be either the United States or Brazil. This proposal was made without consideration of the industrial nurses and, instead,

solely for the purpose of increasing revenues. The third innovation provided that any substantial industrial medical organization might nominate to the Commission for election one titular member. This would mean, for example, that the Industrial Medical Association would have direct representation on the Commission. Conceivably it would mean that the Industrial Nurses International organization, having been recognized, would nominate its own representative and without respect to any one nation. It would appear that no one of these resolutions received official sanction at the time of voting. Only a parliamentarian would know, and there was no parliamentarian.

It is not now assured that at the Helsinki Congress (1957) any nurse will sit as a peer on the Commission but the opportunity has been created. In this anomalous situation it is to be hoped that patiently the industrial nurses in all nations will continue their planning for international activity. It is here proposed that the Industrial Nurses International organization enlarge their victory by seeking to have rescinded the recent favorable but feckless action taken but only so if substitute plans make possible direct representation on the Commission by some small appropriate number of titular members directly nominated to the Commission. At once this would dissipate the vast lack of assurance of even one representative. This could have been accomplished in Naples had there been complete understanding of the situation. The Commission is the friend of industrial nurses and its intentions are high-minded. Betterment is in order by the time of the Helsinki Congress and only the virtue of patience may be requisite. Regardless of all the fumbling and stumbling blocks, there was a victory. Industrial nurses in their ambitions to function on the international level are to be congratulated, and their able spokesman at the Congress is to be commended.

Problem Drinking in Industry

AMERICAN business managements in recent years have come to recognize the nature and magnitude of the problem presented by alcoholism in industry. Experience has revealed that the results of problem drinking in industry have often been masked by being attributed to other causes. It is only by recognizing the reality of alcoholism as a medical condition that a management is able to visualize the true extent of the problem. Once the problem is forthrightly recognized for what it is, effective steps may be taken to combat it. Rehabilitation programs have proved worth-while. An increasing number of employees, where such programs have been established, are being restored to economic usefulness and case absenteeism has been reduced.

A definitive company policy is the first step. It proclaims management's interest and support. It also forms the practical basis for administrative procedures to cover (1) early recognition, (2) rehabilitation, and (3) a consistent method for termination of employment when efforts to effect rehabilitation are unsuccessful. While a company's Medical Department has the primary responsibility for the development and implementation of a program, the company policy should clearly delineate the responsibility of all supervision in the early recognition of abnormal drinking in employees working under them. Some companies may choose to have a formal written statement of policy; others may not see the need for it. In either case, however, a complete understanding and acceptance of the company program are necessary at all levels of management.

THE second step in the program is the establishment of medical facilities for treatment and rehabilitation. Without adequate means for treatment, a company program may degenerate into mere disciplinary measures. To prevent this is the most important responsibility facing the industrial physician. The success or failure of the company program will depend largely on his ability to locate or develop resources for treatment. Usually, these facilities are not available within the industrial Medical Department itself, although some success has been reported with in-plant facilities. More often, recourse is had to community facilities. A number of states have successfully developed a community clinic plan. In larger cities, some clinics have been established in teaching hospitals. For example, a special Consultation Clinic for Alcoholism at the University Hospital of New York University-Bellevue Medical Center, serving chiefly the problem drinker in industry, has met with outstanding success in the rehabilitation of such cases. Smaller communities will depend largely on Alcoholics Anonymous, although the facilities of AA reach across the whole panorama of the rehabilitation effort. The industrial physician, charged with the responsibility for the effectiveness and development of a program to implement his company's policy, should personally ascertain the adequacy of the facilities in his own area and make frequent re-checks to assure their continuing operation in an adequate manner. Otherwise, he may find that a company program, launched on his recommendation and with the best of intentions, may fall into failure and even disrepute.

When the rehabilitation of an employee has failed, the termination of his employment on a consistent basis is usually necessary. Medical advice may be sought, and often it is, on the

wisdom of "another chance" at rehabilitation. The opinion of the physician should have a realistic basis, but can be presented in a fashion to acquaint management with the scope of the problem of abnormal drinking behavior. In this way, the members of the management family may be guided to an appreciation of what must be the ultimate goal of the program, the prevention of problem drinking. Such top-level understanding must exist before a successful educational effort in the interest of prevention can be launched among the rank and file of employees.

The results of company programs now in operation have been more than encouraging and they contribute importantly to the growing realization that all industry, through such plans, can and should make an effective effort to help the problem drinker overcome his handicap. Where successful, such programs will be rewarded not only by the savings through increased efficiencies and decreased absenteeism, but also through the salvage of the skills and experience of long-service employees. —S. CHARLES FRANCO, M.D.

"His Own Man"

IN ITS LAST Annual Report to Stockholders, the management of a successful manufacturing corporation included small portraits of the company officers and heads of departments. The Medical Director was not among them. When asked why, he said he was omitted because of the management's fear that his appearance along with the executive "brass" might make the employees feel that he was too much "a company man."

That is one attitude. Its opposite is expressed in such forthright management recognition of the Medical Director and his department as will be found quoted on page 497 herein.

As to this last-mentioned attitude, there isn't enough of it, but it is on the increase. As to the other, although it seems less common with the passing years, there is still too much. The fact that any of it persists is no credit to management, and every expression of it is a positive discredit to the physician. Its usual expression takes the form of an attempted appeasement. This is useless, because it doesn't appease—nothing is better known to the employees than that their Medical Director is paid by the company. It is harmful, because it puts a covert cast upon an overt situation. And it is almost an affront to any physician—let alone one possessed of the qualities a Medical Director needs—because it expresses fear lest it be assumed that, professionally, he is anything other than "his own man."

The management that keeps open the channels of communication with all of its people knows how the Medical Director and his department are regarded by the employees. Their usual characterization would be that their company physician is not impressed by titles, that his first and foremost duty is to the individual employee as a human being, and that, in the Medical Department, regardless of rank or position or rate of pay, "a man's a man for a' that." Nothing there that needs appeasement!

It isn't often that a company's Annual Report to Stockholders has much circulation among its employees. So probably it was not an employee who asked the above mentioned Medical Director why he wasn't among those present. If it had been, he could have felt flattered. . . .

It was a management man, a company President, who, when asked why his name wasn't in the current "Who's Who," said he'd much rather be asked why it wasn't than why it was.

Specialty Certification

RECENT and enthusiastic announcements have indicated that provision for the certification of industrial physicians is now in the terminal stages of negotiation. While basic agreements may have been arrived at whereby certification may be attained through the operation of an affiliated Board of Occupational Medicine under the American Board of Preventive Medicine, no finalities have been reached and many fundamentals and details await delineation. The real situation is set forth by Dr. C. M. Peterson, Secretary of the Interim American Board of Occupational Medicine:

"The Committee representing the Interim American Board of Occupational Medicine presented proposals to the American Board of Preventive Medicine in Buffalo on October 10, 1954, to define terms of affiliation leading to a program of certification in occupational medicine. The American Board of Preventive Medicine agreed in principle that this form of affiliation was desirable, subject however to exact delineation of regulations governing certification without examination of a Founders Group, and also to submission of details of training and experience to be required of candidates presenting themselves for examination. It is anticipated that these and other essential tasks will be completed in time for consideration by the Advisory Board for Medical Specialties and the Council on Medical Education of the A.M.A. at the meetings of these groups in February, 1955."

After many years of negotiation, it now appears that certification for some industrial physicians is forseeable within months and expectably not to be further delayed into a period of years. Just what numbers of industrial physicians will be accepted into the founding group and the mechanism for establishing this group are among the details as yet undetermined.

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Vallestril has been found to exert its selective "target action" on the vaginal mucosa. Conversely the effect on the uterus or endometrium is negligible.

In pharmacologic studies, using the Allen-Doisy technic, Vallestril was found to be more active than estradiol and twice as potent as estrone on the vaginal mucosa. On the other hand, using the Rubin technic, Vallestril was found to have only one-tenth the activity of estrone on the uterus, a suggested explanation of its low incidence of withdrawal bleeding.

In clinical evaluation, covering a period of two and one-half years, Vallestril was found* to be "an effective synthetic estrogen . . . singularly free from toxic effects and complications, especially uterine bleeding. . . . The beneficial effect of the medication appeared within three or four days in most menopausal patients . . . . failure to encounter withdrawal bleeding in any patient was most gratifying. . . ."

Such unwanted reactions as nausea, mastalgia and edema also occur less frequently with Vallestril.

Vallestril is preferentially indicated whenever estrogens are of value: The menopausal syndrome; pain of postmenopausal osteoporosis; pain of osseous metastases of prostatic cancer.

Dosage: Menopause—3 mg. (1 tablet) two or three times daily for two or three weeks, followed by 3 or 6 mg. daily for one month. Supplied only in scored tablets of 3 mg. G. D. Searle & Co., Research in the Service of Medicine.

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*Sturnick, M. I., and Gargill, S. L.: New England J. Med. *247*:829 (Nov. 27) 1952.

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ANACIN . . . The Anacin Industrial Unit provides 250 cellophane envelopes, each envelope containing two Anacin tablets. This package offers the advantages of cleanliness and convenience for dispensing to individuals. It also assures the proper dosage in every case. Anacin is preferred in so many industrial dispensaries because Anacin gives fast, long-lasting relief from pains of headache, neuritis and neuralgia. When you order Anacin® tablets, order them in this special sanitary industrial unit, 250 envelopes, or 500 tablets, for $2.83.

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BiSoDol Mints . . . For greater convenience, BiSoDol is also packaged as mint tablets, 500 to the bottle. BiSoDol Mints are so palatable that they may be taken without water, if desired. $1.70 for 500 tablets.

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News, Comment, Opinion

INDUSTRY may be considered as an outward and visible sign of the progress of the human intelligence, and the milestones along the road—the stone age, the bronze age, the iron age, the machinery age—gather additional interest when considered as stages in the evolution of mind. . . . The statement may be made that the intelligence of a race is measured by its industry, and that the primary *raison d'etre* of industry is safety and health. In other words industry is the means human intelligence employs to insure the existence of the race.

—From "Industrial Health," edited by GEORGE M. KOBER and EMERY R. HAYHURST, P. Blakiston's Son & Company, Philadelphia, 1924, page vii.

Retirement and Boredom

ONE of the problems of retirement is the possibility that the loss of occupation and resulting boredom will result in early death. Newspapers recently carried a story of the death of Martin Sweigart at the age of 103. He had retired at the age of 80!

—NED HAY, in *Personnel Journal*, October, 1954.

First World Congress

THE FIRST World Congress on the Prevention of Occupational Accidents—organized by the Ente Nazionale Di Prevenzione Infortuni (Enpi) with the cooperation of the International Labour Office—will be held in Rome, Italy, April 2-6, 1955. The subjects of the successive days are "Role and Functioning of Safety Committees"; "Safety of Machinery"; "Influence of Environmental Factors, Particularly of Colour in Workrooms, on Accident Prevention"; "Human Factors and Safety"; "Prevention of Accidents in Agriculture."

No Point

IT IS NOT in the interests of the general welfare that conclusions be drawn attributing causal relationships based on highly improbable evidence. Is it just to permit the concept of "what *might* have occurred" to be synonymous with "what *must* have occurred?" If it is, I see no point in medical evidence since some doctor can usually be found to testify to this effect.

—WALTER P. MUTHER, "Working With Workmen's Compensation," In *Industry*, September, 1954.

"Begins in the Ambulance"

REHABILITATION of an injured worker begins in the ambulance, according to Dr. D. J. Gailbraith, former Vice-Chairman of the Ontario Compensation Board. Medical care is an integral part of rehabilitation and should be administered in such a way as to attain this result in the quickest and most efficient manner. The old idea of exposing the injured individual to first aid, then medical and surgical care, and at the conclusion of such treatment, weeks, months, or years after the accident, turning him over to a new group of individuals who shall then undertake to place him satisfactorily in industry, is becoming archaic. This is a thought to keep in mind the next time anyone in your plant has a serious accident.

—*Monthly Labor Review*, June, 1954, quoted in *Nursing World*, October, 1954.

Time Out

COFFEE may be having its erratic moments as far as home use is concerned but it seems to be going stronger than ever in business offices. The Chicago Management Association just finished a survey of 151 industrial concerns and their use of the "coffee break." About 80% of the companies polled reported the "break" is on the increase and said it results in improved employee morale. More than 47% said it tended to increase production. Less than 24% had nothing favorable to say about the recess, and 28% did not comment. Two-thirds of the responding companies permit 15-minute "breaks" twice a day, and 10% have one 20-minute period.

—*New York Times*, August 17, 1954.

Medico-Politico

REP. WALTER JUDD of Minnesota addressed the Tennessee Valley Medical Assembly a few days ago. He made a few remarks which, coming directly from a lawmaker who is also a physician, confirm what many of us have been saying for a long time. He said that "physicians must understand government and know their way in and out of it. In fact, they must become politicians in a measure." This is necessary, Dr. Judd declared, because government is playing such a strong role in all phases of American

Founders of the counseling service to the medical profession, serving medicine with distinction over half a century.

SITUATIONS WANTED

Medical Director: (261) Well regarded in industrial field; degrees from leading schools; long experience as Director, large industrial hygiene and research program; eminently qualified in toxicological problems; early 40's; strongly recommended.

Medical Director: (262) Outstanding man, both administratively and clinically; five years, Medical Director, large company with over 20 plants; complete charge, all policies; recommended without reservation.

Medical Director: (263) Diplomate, American Board, Internal Medicine; FACP; qualified in every phase of industrial medicine; past six years, Medical Director, major company employing 40,000 men. Top level doctor, nationally recognized in industry; early 40's.

Industrial Hygienist: (264) M.D.; excellent experience, industrial division, governmental program, past three years; early 30's. Prefers New England or East.

Industrial Physician: (265) Interested, industrial medicine as career; eminently qualified as assistant to busy Medical Director; age, 30; Class "A" graduate; year's fellowship, industrial medicine; one year; Director, AEC program; interested isotopes, nuclear energy medicine; Category IV.

Staff Physician: (266) Class "A" graduate; five years, successful private general practice; three years, staff physician, large university; prefers industrial medicine; experienced doctor, well-qualified as an assistant to industrial Medical Director; Liiddle 40's.

Staff Physician: (267) Class "A" graduate; early 40's; four years, surgeon; USAF; fellowship, pathology, three years; two years, assistant Medical director, insurance company; seeks assistantship to Medical Director.

Staff Physician: (268) Class "A" graduate; ten years, successful private general practice; five years, mine physician; prefers industrial position with opportunity for some private practice preferably in the West. Late 30's.

Staff Physician: (269) Class "A" graduate; early 30's; several years, successful private general practice; prefers industrial medicine on salaried basis.

SITUATIONS OPEN

Medical Director: (109) One of major companies in important industry; 26 plants located various sections of America; five foreign plants; 60,000 employees; duties, complete charge program, policies; report to top management; requiries nationally known man; headquarters, New York City.

Medical Director: (110) Chief Physician, several plants located quite near New York City; excellent opportunity for rapid advancement to much higher level; about $15,-16,000; career post.

Staff Physician: (111) Foreign operations major American company; Class "A" modern 100 bed hospital; must be able to do minor surgery; two year contract; warm climate; good salary with perquisites equal to about $5,000 additionally.

Our roster is complete with the names of a great number of excellent companies seeking well-qualified staff physicians, interested in career industrial medicine. These fine opportunities occur in almost every section of our country and beyond our Continental limits. Salaries range from $8,000 to $14,000.

Please write for an Analysis Form so we may prepare an individual survey for you.

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life today. . . . With that I will revert to another favorite theme: If you haven't already, this is a good time for you to look up the Senators and Representatives who make an effort to understand the medical viewpoint on legislation and tell them you appreciate what they are doing in Washington.

—*The AMA Washington Newsletter*, October 1, 1954.

Industrial Physicians Wanted

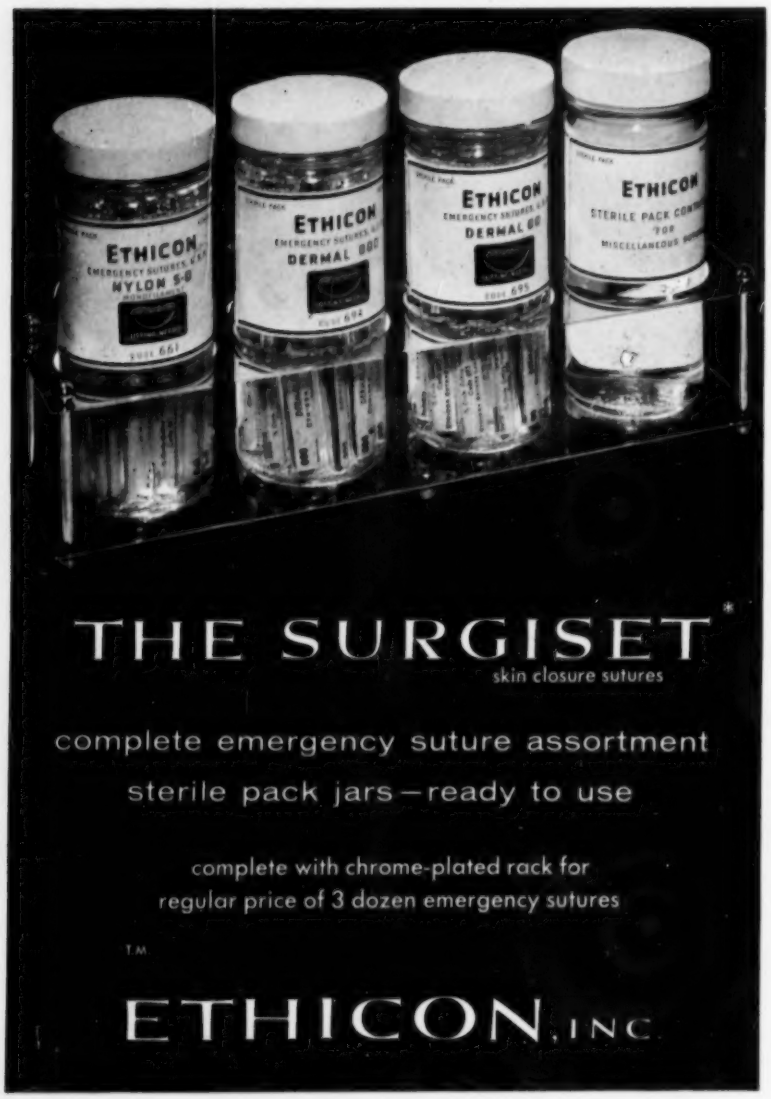
FOR the first time this year, Civil Service Commission is conducting a procurement campaign for physicians to serve in all branches of Federal government. They are needed for duties which range alphabetically from adjudication of disability claims to venereal disease control. Children's Bureau Civil Aeronautics Administration and National Institutes of Health are among the agencies calling for medical personnel. Air Force and Army want civilian pathologists and specialists in industrial medicine.

—*J. Indiana State Med. A.*, September, 1954.

The "Killers" in Smog

W. C. L. HEMEON, Engineering Director of the Industrial Hygiene Foundation, Mellon Institute, Pittsburgh, suspected that the "killers" in deadly smogs over cities are tiny particles of salts that have an acid quality. These particles which had been collected from the smogs over Donora, Pennsylvania, in 1948 and London, England, in 1952, when more than 4,000 people were killed, are less than one-5,000th of an inch in diameter. They are small enough to penetrate deeply into the respiratory tracts of their victims. The particles were composed chiefly of ammonium chloride, calcium sulphate, zinc sulfate, and traces of salts of sodium potassium, aluminum and magnesium. "Fatalities and illnesses in acute smog episodes," he said, "probably are the result of simple irritation of the respiratory tract by these substances, and are not due to systemic poisoning by sulfur dioxide or other atmospheric gases as is generally believed." The sulfates, he suggested, originate from the combustion of coal which contains sulfur. Sulfur is oxidized and the oxides combine with traces of metals in the coal to form sulfates. He proposed further study to obtain "more clear-cut" information.

—RAY BRUNER, Science Editor, in *Toledo Blade*, September 14, 1954, describing American Chemical Society meeting, New York City.



Besides Social Security

IT IS the opinion of the writer that the time has come for a change in thinking. We must look upon the aging not as transients who are merely waiting for their departure, but as citizens older in years to be sure, who require a little more rest than usual, whose tasks might perhaps have to be lightened a bit, but who are still capable of participating in the world's work and doing their share. The first step that is necessary to make happier the lot of old people is to individualize retirement. We should do away with the arbitrary age limit. If a man of 65 or older is capable of doing his work satisfactorily, he should remain employed. The next step is to change our point of view about the Social Security payments. These must be looked upon as merely supplementary to a man's earnings instead

of the other way around. In other words, the older individual should be permitted to work in accordance with his capacities or skills regardless of Social Security.

—From "Older People Belong," by MAX H. WEINBERG, M.D., in *Pennsylvania Med. J.*, quoted in *J. Indiana M.A.*, September, 1954.

Reaction Has Set In

IS ENGLAND returning to the private practice of medicine? asked an editorial appearing in the July 20 issue of *New York Medicine*. The editorial pointed out that as in the United States, British companies have to negotiate new contracts with labor unions and, as in the U.S., they have applied so-called "fringe" benefits in the health and welfare field. "And what are these new fringe benefits in England?" "They are prepaid medical insurance plans which make it possible for the workers to go to private physicians of their own free choice and have the plan pay the costs of medical care. . . . Human nature being what it is, we now have the situation where the reaction has set in and the British workers prefer not to go to the National Health Service, but rather to go to their own private doctors. They want free choice. The trouble is they did not realize this until they surrendered their free choice. Now the unions find they have to negotiate to get it back."

—*J. Indiana State Med. A.*, September, 1954.

Group Life

GROUP life insurance for over two million government employees has been approved by the House of Representatives. Members of Congress and an estimated 2.3 million Federal employees would be covered by life insurance equal to each person's annual pay, raised to the next even thousand. The maximum life insurance would be $20,000. A payroll withholding plan would deduct 25 cents biweekly for each $1000 of insurance. The government would contribute an amount not exceeding one-half of the employee's contribution. Payments of premiums by employees would end at age 65, or earlier if the employee leaves government service, but he would retain the right to convert it to an individual policy. The total cost of the program is estimated at $70 million a year, with the government contributing $22.7 million. —*Council News*, August, 1954.

Accent on Prevention

INDIA is on the path of rapid industrialization. The Five-Year Plan is gearing India to higher and higher production of commodities and consumer goods. People from rural areas come and flock to the urban in search of new occupation in industry. The concomitant problems of Slums, Squalor, Diseases, Overcrowding and Depravity flare up. Progress in the development of manufacturing processes and the use of different chemicals increase the scope of work of the industrial physician. It is here that a Society like ours can be very useful to industry. In the present Employee's State Insurance Scheme the worker gets medical attention only when he falls ill, or is injured—not before. The disease, the injury, the disability and the man-hours lost are not prevented.

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- AVOID GREASY PREPARATIONS (SALVES) ON ACUTELY INFLAMED OR EXUDATIVE AREAS.

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PROMOTE FASTER HEALING
AVOID OVERTREATMENT

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Therefore, in the economic interest of industry itself, it is absolutely necessary to retain the services of a Medical Officer. At present routine curative treatment takes up most of the time of the physician, and he has less time to look after preventive measures. After the implementation of the E.S.I.S., he will be able to spend most of his time on the preventive steps; he will therefore pay bigger dividends to the industrialist. In England though the National Health Insurance Scheme came into force from July, 1948, the Factory Medical Service is not only retained, but also greater importance is given to it. Industry must be on her guard, and if she succumbs to temptation of dispensing with the services of her physicians to save a few hundred rupees a month, it will act like a boomerang on her, for loss of man-hour by sickness absenteeism and the cost of providing free medical treatment elsewhere will cost her many times the salary of the Medical Officers. Some concerns have started thinking of reducing, some have already started replacing and reducing their present medical staff. It is not a step in the right direction. Medical service in industry is generally considered by most employers as a "welfare" or "beneficiary" service for their employees. It is not considered as an essential or integral part of the organization. Hardly any attention is paid by management to the Medical Department except in a few progressive concerns, and it is never given a status equal to other departments such as Engineering, Manufacturing, Accounts, Sales and other departments. This concept of medical service is certainly erroneous. The employer has to care for it as much as he does for his buildings, his machinery and his other paraphernalia. The human machine certainly requires more humane treatment than man-made machines. Therefore Factory Medical Service is more obligatory than optional. In my opinion the withdrawal of Industrial Health Services will be a retrograde step of the gravest social importance.

—Dr. A. D. Daftary, in *Proceedings of the Society for the Study of Industrial Medicine* (India), June, 1954.

Pennsylvania Commission

This Commission (on Industrial Health and Hygiene) was anxious to pursue the theme suggested by the Council on Industrial Health of the American Medical Association—"to achieve a closer relationship between the industrial physician and the general practitioner; and to extend to him every opportunity for becoming more completely informed about industrial health matters even to the point of his accepting some in-plant industrial medical service." With the permission of all concerned in the State Medical Society, our subcommittee outlined a series of six lecture sessions. Having chosen the Delaware County Medical Society for a pilot study, we met with the Industrial Health Committee of that society to determine the attitude toward our program. The result of our deliberations was to decide that the general practitioner probably could *not* be induced to attend a series of lectures but *could* be induced to attend a luncheon, a program, and a plant tour on most any Wednesday afternoon. Thus this pilot effort resulted in a visit to the Chester branch of the Ford Motor Company in March, and the Marcus Hook branch of the Sun Oil Company in April. There were about 50 physicians in attendance at both the Ford Company plant and the Sun Oil Company plant. Intelligent questions were asked by the general practitioners both at the question and answer period after the tour and as we mingled during the tour itself. Several family physicians met their own patients and spoke to them at work as we passed through the two plants.

—*Pennsylvania Med. J.*, September, 1954.

No Conclusive Scientific Proof

The Tobacco Industry Research Committee reported in July that it had named Timothy V. Hartnett, of Louisville, Kentucky, as its full-time Chairman. Mr. Hartnett, who has been in the tobacco industry for 45 years, retired on June 30 as president of the Brown and Williamson Tobacco Corporation. Announcing that the tobacco industry is determined to find the answers to the public's questions about smoking and health, Mr. Hartnett stated further that the research will be conducted by recognized medical and scientific organizations and individuals who will report their findings independently. Following this line, the new Chairman believes that it is an obligation of the Committee to

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remind the public of the following essential facts: (1) There is no conclusive scientific proof of a link between smoking and cancer. (2) Medical research points to many possible causes of cancer. Statistics indicating a relationship between smoking and disease could apply with equal force to many other aspects of modern life (3) Full evaluation of statistical studies now under way is impossible until these studies have been completed, fully documented and exposed to scientific analysis through publication in accepted journals. (4) In their recent preliminary report to the American Medical Association, the American Cancer Society and its statistical research staff placed careful qualifications and limitations on their findings relating to this subject. These qualifying statements should not be overlooked. (5) The millions of people who derive pleasure and satisfaction from smoking can be reassured that every scientific means will be used to get all the facts as soon as possible. The frank statements of the spokesmen of the tobacco industry can be accepted as guarantees that all evidence for or against the possible damaging effects of tobacco will be carefully appraised and fearlessly publicized. The safety of the public in this respect will obviously be the most important consideration.

—*New England J. Med.*, September 2, 1954.

Falls

ACCIDENTAL falls take about 21,000 lives each year in the United States, approximately as many as tuberculosis, according to statisticians of the Metropolitan Life Insurance Company. As a cause of accidental death, falls rank second only to motor vehicles. About two thirds of all fatal falls take place in and about

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If you are in need of someone of his qualifications, we shall be glad to tell you more about him.

Among our opportunities are:

(a) A well known company is in need of a few physicians on either a part or full time basis. Men who have completed their specialty training will be welcome. A young man who wishes a career in industrial medicine would find an interesting opportunity with this organization.
The plant is new, air conditioned throughout. The location is a university city in the southwest.

(b) The midwestern plant of a large company recently lost its medical director. The plant has 4,000 employees; the department is well-staffed, well-equipped. In coming to us for recommendations, our clients have asked for a man interested in a career in industrial medicine—one who can assume increased responsibilities as time goes on.

(c) A nationally recognized company in New England has decided to engage a full time medical director. He should have a strong interest in people—possess the type of personality that will encourage them to come to him. The medical department is new—now being served by physicians on a part time basis.

(d) An insurance company with regional offices in various parts of the country, is in need of an assistant medical director—preferably one well trained in internal medicine. Experience in insurance or industrial medicine would be advantageous but is not required.

Please write for further details. All negotiations are strictly confidential.

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the home. Only about 3% occur in workplaces, which is a substantially smaller proportion than 10 years ago, and undoubtedly reflects the success of industrial safety programs. The death rate from accidental falls is higher among males than among females at ages under 75. Above that age the reverse is true. More than half of all the deaths from falls are concentrated at ages 75 and over. Below age 15 falls from windows, porches, roofs, swings, trees and fences are the most common types. Diving accidents account for an appreciable part of the fatalities from falls among boys in the late teens. Falls on stairs account for nearly a fourth of the deaths in the 25-44 group, and close to a third in the 45-74 age range. Among older people, a considerable proportion of the fatal falls occur while they are merely walking about the house.

—Metropolitan Life Insurance Company Release.

Save by Safeguarding

A THOROUGHLY businesslike trade association has told hard-headed department store executives that they can save a great deal of money by safeguarding the health of their employees. A study in the current issue of *Stores*, official organ of the National Retail Dry Goods Association, shows that a health maintenance program brings lower insurance premiums, less absenteeism, and better employee morale.

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Pre-placement medical examinations, post-absence check-ups, examinations before transfer to different kinds of work, confidential periodic examinations and health counseling are the foundations of such a program. In department stores, as in other businesses, employers find that healthy employees work more efficiently.

—*New York Times*, August 11, 1954.

Occupational Health

OCCUPATIONAL health, concerned as it is with all efforts to maintain the health of the worker at optimal level, provides another excellent demonstration of some of the practical values of a well conceived and well conducted health service. One of the methods used most successfully in bringing students to some understanding of health is to let them see for themselves the advantages that a progressive industrial plant derives from introducing a health program for its employees. The student is prompted to look for the answer to the following question: Why does industry, which generally measures success in terms of money, spend its money for the health of its workers? The answer is that it pays. This may be a somewhat surprising discovery for the student. The wizards of business and finance produce figures to show fewer compensation claims and less absenteeism and hospitalization, to say nothing of the gain in the well-being of the worker as he realizes that the boss really cares about his worker's health. Considerable difference of opinion exists in medical schools concerning the amount of time that should be given to the teaching of industrial medicine. Much of the detail of this subject belongs more properly to graduate training of the physician who anticipates a career in industrial medicine. But, at the same time, direct observation of the services of Medical Departments of industrial plants provides a convincing demonstration of preventive medicine in action.

—From "Integrating Preventive and Social Medicine in the Medical Curriculum," by JOHN PERRY HUBBARD, M.D., in *New England J. Med.*, September 23, 1954.

Government Medicine

SCARBOROUGH, England, September 30—Britain's Laborites, who nationalized medicine in 1948, today complained of dirty hospitals and inefficient medical staffs. At their annual conference at this northern resort, the socialists called for tighter bureaucratic controls and the inclusion of more socialist and trade union sympathizers in the health service administration. Mrs. E. K. Leggatt, representing the Labor party's Kingston on Thames branch, said trained nurses were "fed up" with having to do the dirty work in hospitals and were quitting the service wholesale. Another speaker, W. L. Griffiths, said tens of thousands of skilled hospital workers had quit because of low pay. "All we are getting into the hospital service are the dregs of the labor market and they do not stay long because they have no interest in the job," he claimed. The statement drew angry cries of "no" and a demand that he withdraw his "horrible slur." The demand was ignored.

—*Chicago Tribune*, October 1, 1954.

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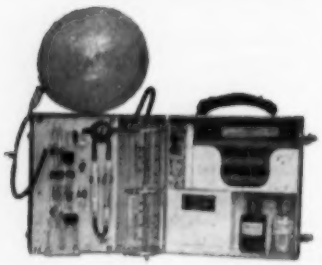

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INDUSTRIAL medicine will undoubtedly develop as industry expands and the population of our state increases. In many cases the employer, in the interest of constant and dependable medical care of the employee, will seek out and enlist the service of a doctor or clinic. Or, efforts may be made by the doctor or clinic to be listed as company physicians. This establishment of liaison between company and physician can definitely prove of benefit to the patient by having available immediate and constant medical coverage. This procedure loses its purpose and becomes undesirable when the patient is forced to accept one medical doctor against his desire, particularly when his own physician is available. The patient must be permitted his choice of physician. By his selection of physician there is added respect for the doctor, treatment will be more satisfactorily followed and, with cooperation, it is likely that the patient can be returned to full duty at an earlier date; a shorter illness for the patient and less expense to the employer and Industrial Commission. By Industrial Commission regulation the employer can ask to have a patient checked and so prevent malingering and "goldbricking." The patient in turn desires to receive treatment by the physician of his choice. Forcing a physician upon a patient will destroy good rapport, increase suspicion that he may be returned to work before it is advisable, and approaches a limited form of socialized medicine. We are adverse to "Socialized Medicine" on a national scale; how can we condone it in a limited form? The patient must be given his choice of physician. The medical profession recognizes that this choice must exist. It seems desirable that the Industrial Commission should so inform employers and employees.

—D.W.N., Editorial in *Arizona Med.*, September, 1954.

Tomorrow's Problems

THE SUBJECT to be discussed at the Medical Conference of the Industrial Hygiene Foundation's Nineteenth Annual Meeting (November 17-18) will be "Industrial Health Problems of Tomorrow." Various phases of the theme will be explored by F. B. Lanahan, M.D., Paul E. Smith, Jr., Allan J. Fleming, M.D., M. N. Newquist, M.D., O. T. Mallery, Jr., M.D., and Joseph T. Beardwood, Jr., M.D.

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Staff Physician: (RD-106) Age 32. Marquette University Medical School. Eligible for American Board of Physical Medicine; also well trained in Public Health. A man who intends to make his career in field of industrial medicine. Will go anywhere.

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Staff Physician: (MS-108) Age 28. M.D. degree. Louisiana State University. One year general practice residency. Excellent references. Definitely wants to make a career in industrial medicine. Prefers South or Southeast.

Staff Physician: (GL-109) Age 35. Eight years successful private general practice; prefers industrial medicine. Has had good training in internal medicine. Prefers Middle West.

Medical Director: (MK-110) Age 48. Surgeon. Has set up and directed to successful consummation several medical programs for industrial companies and has had published articles in this field. Excellent medical background.

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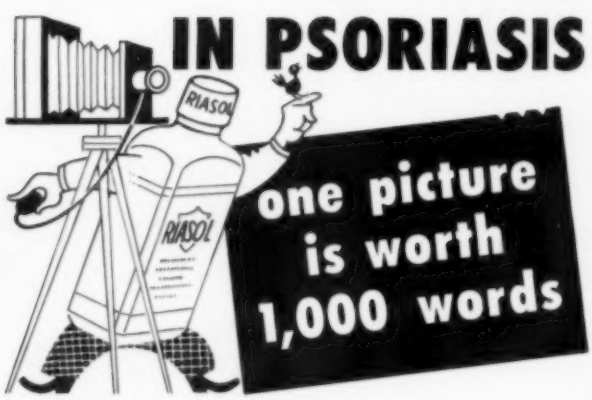

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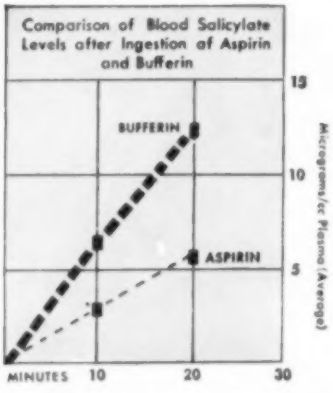

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